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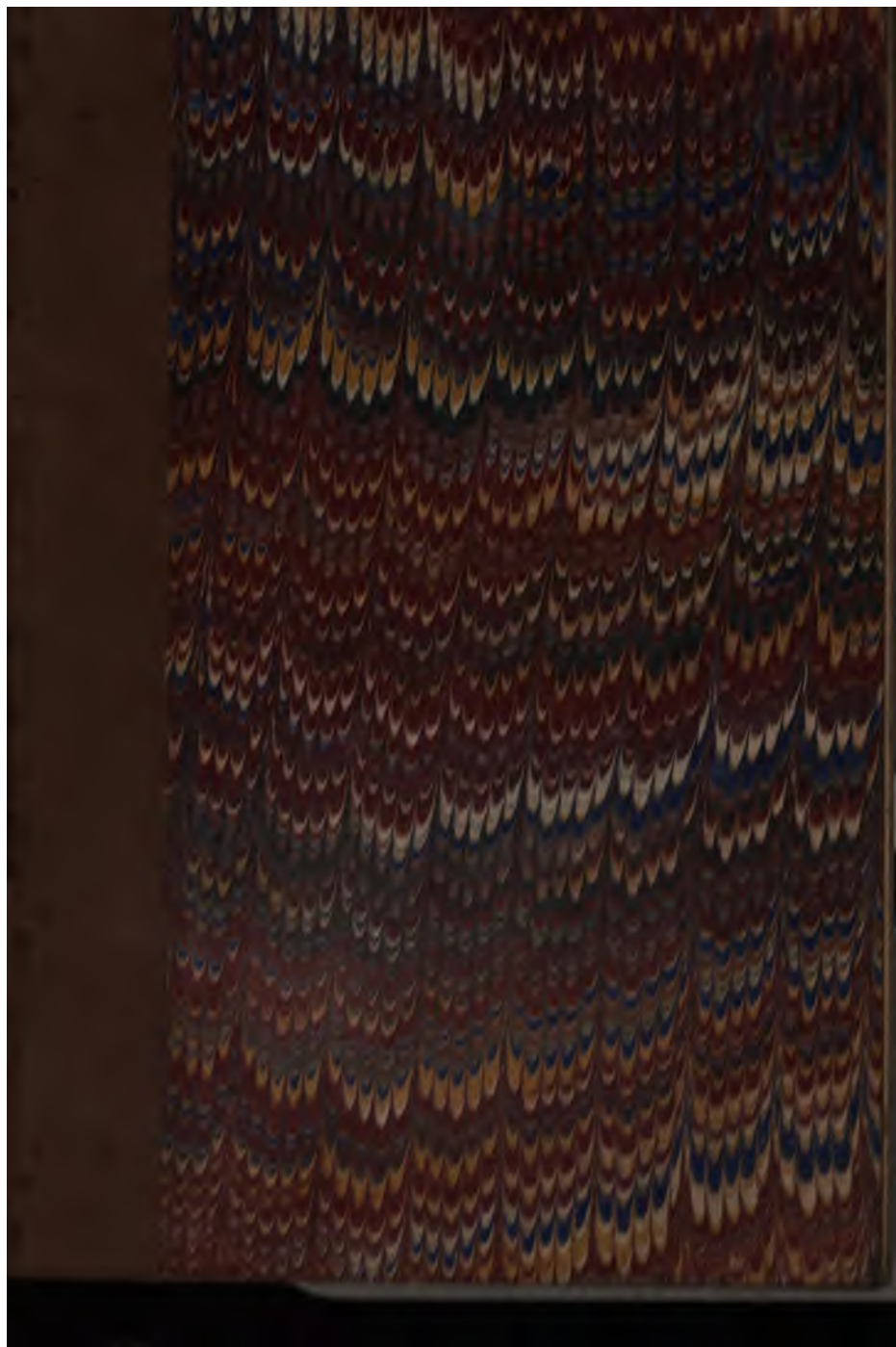
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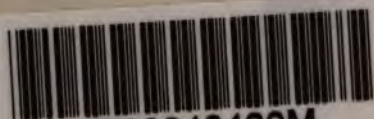
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PATENTS FOR INVENTIONS.

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ABRIDGMENTS

OF THE

Specifications

RELATING TO

POTTERY.

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PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.

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LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,  
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## PREFACE.

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THE Indexes to Patents are now so numerous and costly, as to be placed beyond the reach of a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of Invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Subject-matter, Reference, and Alphabetical Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the latter are sold have been added.

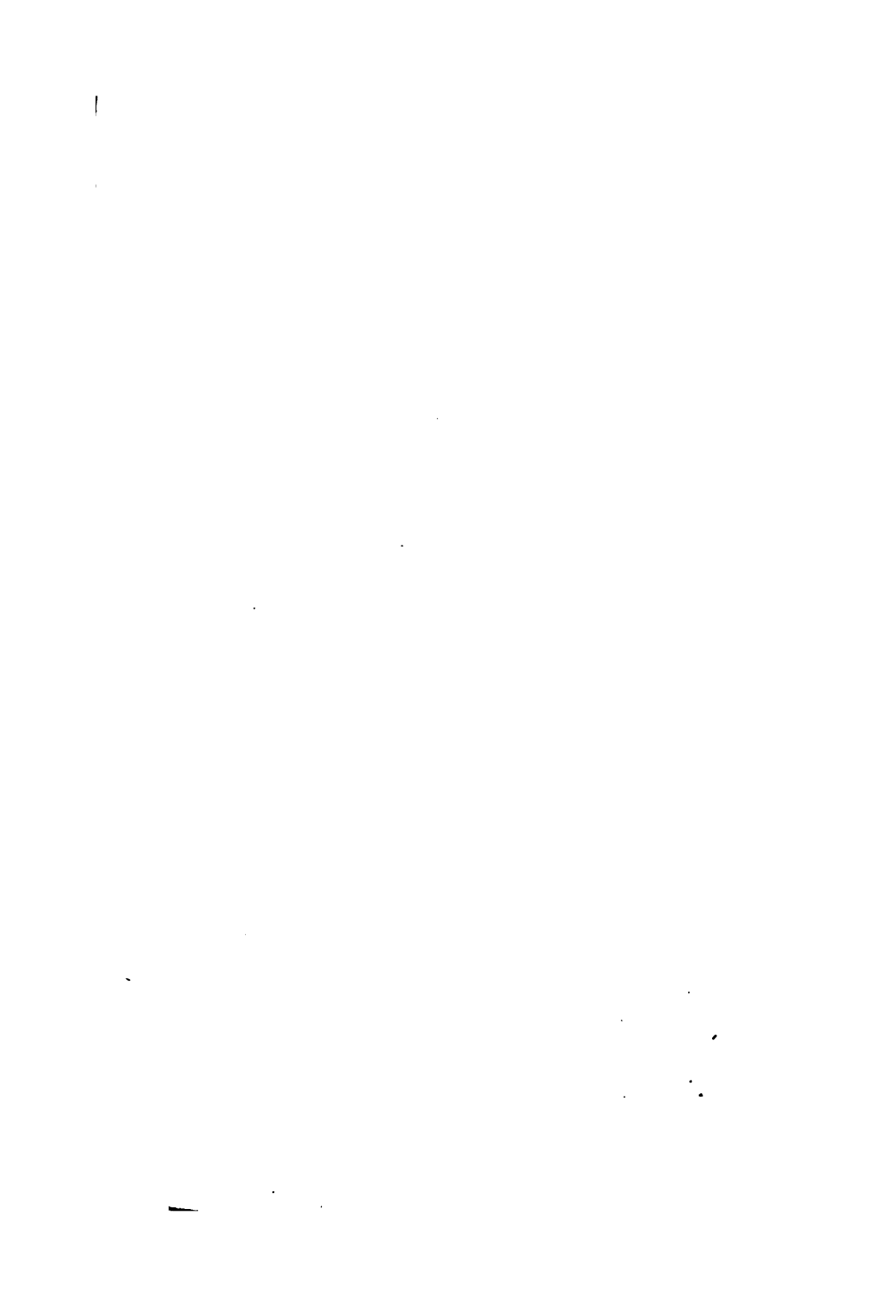
In this Series of Abridgments of the Specifications of Patents relating to Pottery are comprised the Inventions which relate to the application to certain purposes of articles made of this manufacture; also the Inventions relating to the making and preparing of the various materials employed; likewise, the machines and machinery and methods of manipulation adopted throughout the various branches of the manufacture; together with the processes for ornamenting, painting, printing, and finishing the same.

Many of these Specifications relating to Pottery embrace also inventions in Drain Tiles and Pipes, and Bricks and Tiles; in such cases reference is made to these classes of Abridgments.

B. WOODCROFT.

February 1863.





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# POTTERY.

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## P O T T E R Y.

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A.D. 1626, October 24.—N<sup>o</sup> 35.

ROUS, alias RIUS, THOMAS, and CULLYN, ABRAHAM.—  
“ The sole making of the stone pottē, stone juggē, and stone  
“ bottellē,” “ for the tearme of fowerteene yeares, for a rewadr  
“ for their invencon, and they have voluntarily offered unto us  
“ for the same a yearly rent of five poundē towardē our revenue,  
“ soe long as they have benifitte by this our grant, neyther doe  
“ they desire by vertue of such grant to hinder the imporcacon  
“ of these comodities by others from forreigne parts.” No  
description of their invention is given.

[Printed, 4d. No specification enrolled.]

A.D. 1635, February 17.—N<sup>o</sup> 78.

RAMSEY, DAVID, ARNOLD, MICHAELL, and AYLIFFE,  
JOHN.—“ A very profitable way and meanes never yet practiced  
“ in any of our domynions, as well for the well boylinge of  
“ greate breweinge vessellē of liquor, houldinge three score  
“ barrellē, more or lesse, and other greate vessellē vsed by dyers,  
“ soapboylers, salte makers, salte peter makers, &c., with halfe  
“ the fuell they now spende, as alsoe for the removall and  
“ takeinge away of the greate annoyance of smoake which  
“ ariseth from brewhouses, dyehouses, &c., and that the same  
“ invencon is alsoe very usefull for the dryeing of bricke, all  
“ manner of tyles, and all such sortes of tyles as cannot be made  
“ in this kingdome but in the heate of sumer; and alsoe that  
“ they have found out the arte and skill of makeinge and  
“ dryeing of all sortes of panne tyles, stone juggē, bottles of  
“ all sizes, earthen wicker bottles, melting pottē for goldsmiths,  
“ and other earthen comodities within this our realme, which

"nowe are made by straungers in forraigne partes, and that in  
 "the makeinge of the same earthen comodities as aforesaide"  
 the said patentees "shall have employment for many of our  
 "poore subjecte, whoe thereby shallbee sett on worke and be  
 "competently mainteyned, and will alsoe sell them cheaper then  
 "they are nowe sould," "for the terme of fourteene yeares, they  
 "rendringe vnto vs our heires and successors, one full fowerth  
 "parte of the benefitt arisinge by the saide newe invençons;" and  
 it is stated that no person shall "drie bricke, tyles, or any such  
 "earthen comodities herein-before mençoed with seacoales,"  
 "after the way and meanes soe invented by them as aforesaid;"  
 but no description of the mode is given.

[Printed, 4*l*. No specification enrolled.]

A.D. 1671, April 23.—N<sup>o</sup> 164.

DWIGHT, JOHN.—"The mistery of transparent earthen ware,  
 "comonly knowne by the names of porcelaine or China, and  
 "Persian ware, as alsoe the misterie of the stone ware, vulgarly  
 "called Cologne ware; and that he designed to introduce a manu-  
 "facture of the said wares into our kingdome of England, where  
 "they have not hitherto bene wrought or made;" granted "for  
 "the tearme of foureteene yeares," paying "yearely and every  
 "yeare during the said terme" "twentie shillinge of lawfull  
 "money of England." It does not say what materials are to be  
 employed, nor what the process is for either of the manufactures.

[Printed, 8*d*. No specification enrolled.]

A.D. 1676, October 27.—N<sup>o</sup> 191.

VAN HAMME, JOHN ARIENS.—"Art of makeinge tiles and  
 "porcelane and other earthen wares, after the way practised in  
 "Holland," granted "for and dureinge the terme of foureteene  
 "yeares." No description of the process is given.

[Printed, 8*d*. No specification enrolled.]

A.D. 1684, June 12.—N<sup>o</sup> 234.

DWIGHT, JOHN.—"Several new manufactures or earthen-  
 "wares, called by the names of white gorges, marbled porcellane  
 "vessells, statues, and figures, and fine stone gorges and vessells,  
 "never before made in England or elsewhere; and alsoe dis-

" covered the mistery of transparent porcellane, and opacous, redd, and darke coloured porcellane or China and Persian wares, and the mistery of the Cologne or stone wares," granted "for the terme of fowrteene years." It does not say what materials are employed, nor does it give any process.

[Printed, 4d. No specification enrolled.]

A.D. 1722, June 13.—N<sup>o</sup> 448.

HOLT, RICHARD, and LONDON, SAMUEL.—" A certain new composition or mixture (without any sort of clay) for making of white ware, which is formed and moulded in a method hitherto not known or practised, and far surpasses the finest of delf ware, or any other sort made in any part of Europe, and also by their new method of impression make the fabrick of earthenware of a more exquisite shape than the present method of turning could ever perform or arrive to, by which meanes our subjects will be able to excell all Europe, and not only employ a great many of our own poor, to the great benefit of trade and the manufactures of our kingdom, but also prevent the clandestine running of delf ware, &c., from foreign parts into Great Britain," granted "for the term of fourteen years." It does not say of what materials the composition is made, except that it is without any sort of clay, nor does it describe any method of impression."

[Printed, 4d. No specification enrolled.]

A.D. 1722, October 17.—N<sup>o</sup> 452.

BILLIN, THOMAS.—" A method for making the most refined earthenware with help of clay & other materials found within this kingdom which ever yet appeared in this part of Europe, of a nature and composition not only transparent, but so perfect in its kind, and of principles so firmly vnited as (contrary to the nature of all other earthenwares) to resist almost any degree of heat, by which qualities it is more valuable, & of greater vse & ornament than all other kinds ever yet invented or practised in this kingdom, & capable of being wrought into vessels and ornaments for any vse; & for the working of the same invention he hath invented particuler and

"proper engines & tools." No description is given of the mode of manufacture, or of the engines or tools mentioned in the title of the invention.

[Printed, 4d. No specification enrolled.]

A.D. 1724, January 28.—N° 461.

**REDRICH, ROBERT, and JONES, THOMAS.**—"A new art or method, as well for staining, vaining, spotting, clouding, damasking, or otherwise imitating the various kinds of marble, porphyry, and other rich stones and tortoiseshell, on wood, stone, and earthenware, and all and every such good<sup>e</sup>, wares, vtensils, and things as are cut, made, or fashioned thereout, as for the making, marbling, veining, spotting, staining, clouding, and damasking any linen, silks, canvas, paper, and leather." No description is given of how this art or method is conducted.

[Printed, 4d. No specification enrolled.]

A.D. 1726, November 5.—N° 487.

**BENSON, THOMAS.**—"An engine or new method for the more expedition working the said flint stone, whereby all the said hazard<sup>e</sup> and inconveniences attending the same will effectually be prevented." It is stated that in the making of "white pots" flint stone is "the chief ingredient," and that the method hitherto used in preparing it "has been by pounding or breaking it dry, and afterward<sup>e</sup> sifting it through fine lawns, which has proved very destructive to mankind;" and this invention is to obviate it, and is as follows:—The flint stones are first wetted, then crushed as small as sand by two large wheels, of the bigness and shape of mill stones, of iron, and made to turn upon the edges by the power of a water-wheel;" this material is afterwards conveyed into large circular iron pans, "in which there are large iron balls, which by the power of the water-wheel above named" are swiftly driven round; in a short time the operation is concluded, and by turning a tap the material empties itself into casks.

[Printed, 4d. No specification enrolled.]

A.D. 1729, May 9.—N° 510.

**BELL, SAMUEL.**—"A new method not hitherto practiced within Great Brittain, for making of a red marble stone ware with

“mineral earth, found within this kingdom, which being firmly vnited by fire will make it capable of receiving a gloss so beautiful as to imitate, if not to compare with rubie; that the stone ware may be formed into vessells for any necessary vse, or into ornaments for houses or gardens, such as jarrs, flower potts, &c., it being the most perfect of its kind both in colour, nature, and form, that hath ever yet appeared in this part of Europe.” No process is given, nor is the mineral earth described.

[Printed, 4d. No specification enrolled.]

A.D. 1732, January 14.—N<sup>o</sup> 536.

BENSON, THOMAS.—“A new engine or method for grinding of flint stones, being the chief ingredient used in making of white wares, such as pots and other vessels, a manufacture carried on in our county of Stafford, and some other parts of this our kingdom; that the common method hitherto used in preparing the same hath been by breaking and pounding the stones dry, and afterwards sifting the powder through fine lawns, which hath proved very destructive to mankind, occasioned by the dust sucked into the body, which being of a ponderous nature, fixes so closely upon the lungs that nothing can remove it, in-  
somuch that it is very difficult to find persons to engage in the said manufacture, to the great detriment and decay of that branch of trade, which would otherwise, from the usefulness thereof, be of great benefit and advantage to our kingdom; that by the petitioner’s invention, the flint stones are sprinkled with water, so that no dust can rise, and then ground as fine as sand with two large stones, made to turn round upon the edges by the power of a wheel, worked either by wind, water, or horses, which is afterwards conveyed into large stone pans, made circular, wherein are placed large stone balls, which, by the power of such wheels, are driven round with great velocity, that in a short space of time, the flint stones so broken are reduced to an oily substance, which, by turning of a cock, empties itself into casks provided for that purpose; that by this invention all the hazards and inconveniences in making the said manufacture in the cōmon way will be effectually prevented, and in every particular tend to the manifest improvement and advantage thereof, and preserving the lives of our

" subjects employed therein." In the foregoing title is contained all the description given of the invention.

[Printed, 4d. Petty Bag.]

A.D. 1733, April 24.—N° 541.

SHAWE, RALPH.—" Various sorts of mineral earth, clay, and  
" other earthy substances, which being mixt and incorporated  
" together, make up a fine body of which a curious ware may be  
" made, whose outside will be of a true chocolate colour, striped  
" with white, and the inside white, much resembling the brown  
" china ware, and glazed with salt." No description is given  
" either of the process or the materials.

[Printed, 4d. No specification enrolled.]

A.D. 1744, December 6.—N° 610.

HEYLYN, EDWARD, and FRYE, THOMAS.—" A new method of  
" manufacturing a certain mineral, whereby a ware might be  
" made of the same nature or kind, and equal to if not exceeding  
" in goodness and beauty, china or porcelain ware imported from  
" abroad." "The material is an earth, the produce of the  
" Cherokee nation in America, called by the natives unaker."  
A glass is formed in the usual way with one part of either  
" pott ash, fern ash, pearl ash, kelp, or any other vegetable  
" lixiviall salt," and "one part of sands, flints, pebbles, or any  
" other stones of the vitrifying kind," and reduced to "an im-  
" palpable powder," and mixed in different proportions, according  
to the nature of the ware to be made, with unaker, from which  
sand and mica have been removed by washing. These are well  
kneaded together, and thrown on a wheel, cast into moulds  
or imprinted into " utensills, ornaments, &c.;" thrown goods are  
also turned on a lathe & burnished. The articles are "put into  
" a kiln and burned with wood," called "biscuiting;" if they are  
very white, they are ready to be painted blue, with "lapis lazuli,  
" lapis armenis, or zapher, highly calcined, and ground very  
" fine;" they are then to be dipt in a glaze composed of unaker,  
" & the above glass mixed in certain proportions, & calcined  
" in a reverberatory," with so much of the above glass ground  
fine in water, and dried, and burned "with a clear wood fire, and  
" when the glaze runs true, lett out the fire;" they are not to  
" be taken out of the kiln till it is thorough cold."

[Printed, 3d. Petty Bag.]

A.D. 1749, November 17.—N<sup>o</sup> 649.

FRYE, THOMAS.—“New method of making a certain ware, “ which is not inferior in beauty and fineness, and is rather superior “ in strength, than the earthenware that is brought from the East “ Indies, and is comonly known by the name of china, japan, or “ porcelain ware.” Animals, vegetables, and fossils, by calcining, grinding, and washing, are said to produce an insoluble matter named “ virgin earth,” but some “ in greater quantities than “ others, as all animal substances, all fossils of the calcareous “ kind, such as chalk, limestone, &c. ; take, therefore, any of “ these classes, calcine it,” grind and wash it in many waters, and “ reiterate the process twice more, when the ashes or virgin “ earth will be fit for use.” These ashes are mixed in certain proportions with flint, “ white peble, or clear sand,” and with water made into balls or bricks, highly burned, & ground fine, and mixed with a certain proportion of pipeclay ; it is thrown on the wheel, & when finished, dried, burned, and “ painted with “ smalt or zaffer ;” when it is ready to be glazed with a glaze made first by making a glass with salt petre, red lead, and “ sand, “ flint or other white stones” in certain proportions, grinding it up well, and mixing it with a certain proportion of white lead, “ adding a small proportion of smalt to clear the colour.” After dipping & drying the articles are put in cases, and burned “ with wood, till the surface of the ware is clear and shining.”

[Printed, 3d. Rolls Chapel Reports, 6th Report, p. 124 ; Rolls Chapel.]

A.D. 1762, January 25.—N<sup>o</sup> 767.

WHITE, WILLIAM.—“New invented manufacture of crucibles “ for the melting metals and salts, &c., called by the name “ of white crucibles or melting potts, made of British materials, “ and never before made in England or elsewhere, and which I “ have lately sett up at Fulham aforesaid.” “Take Sturbridge “ clay and Dorsetshire clay, calcined ; mix them with Woolwich “ sand and water, to be trodden with the feet, and then burned.”

[Printed, 3d. Petty Bag.]

A.D. 1764, December 5.—N<sup>o</sup> 821.

WILLIAMSON, JAMES, and SPACKMAN, JOSEPH.—“A new “ method of turning ovals in pewter, English china, and all other “ earthenwares, so as to become of general utility and benefit to “ his said Majesty’s subjects of this his kingdom.” This consists



of a lathe for elliptical turning. On the end of "the mandrel" is screwed a round plate, on which another plate holding the chucks slides backwards and forwards, between two bars fastened on the plate; at the back of the plate are two bars, having shanks, which pass through slits in the round plate, and are fastened to the first sliding plate. On the back side of the collar in which the mandrel works a plate is fastened, and on this is a ring, round which the two bars above spoken of, work. The centre of the ring being drawn from the centre of the mandrel, forms the ellipsis or oval in the work.

[Printed, 5*d*. Rolls Chapel Reports 6th Report, p. 133; Rolls Chapel.]

A.D. 1766, June 10.—N<sup>o</sup> 849.

LAURAGUAIS, THE COUNT DE.—"A new method of making "porcelain ware in all its branches, viz., to make the courser "species of china, the more beautiful ones of the Indies, and the "finest of Japan." No process is given, nor material to be used specified.

[Printed, 4*d*. No specification enrolled.]

A.D. 1768, March 17.—N<sup>o</sup> 898.

COOKWORTHY, WILLIAM.—"A kind of porcellain newly "invented by me, compos'd of moorstone or growan and growan "clay." The moorstone stone or growan is said to be known as such "in the countys of Devon and Cornwall," and is generally composed of grains of stone or gravel of a white or whiteish colour, with a mixture of talky shining particles; these stones are fusible. "The earth or (growan) clay, for the most part, lyes in "the valleys where the stone forms the hills." "The stone "is prepared by levigation in a potter's mill in water," "to a "very fine powder." "The clay is prepared by diluting it with "water," allowing "the gravell & micæ to subside," pouring the water white with clay into vessels, and allowing the clay to subside. It is said that the earth "gives the ware its whiteness "and infusibility," and the stone "its transparence and mellow- "ness," and they are mixed "in the method used by potters," "in different proportions, as the ware is intended to be more or "less transparent." The articles formed "when biscuited," are dipped in a glaze made of "levigated stone, with the addition of "lime and fern ashes," or "magnesia alba," and baked.

[Printed, 3*d*. Webster's Reports, vol. 1, p. 39; assigned to Richard Champion, vide Rolls Chapel Reports, 6th Report, p. 140; Petty Bag.]

A.D. 1769, November 16.—N° 939.

WEDGWOOD, JOSIAH.—“The purpose of ornamenting earthen and porcelaine ware with an encaustic gold bronze, together with a peculiar species of encaustic painting in various colours in imitation of the antient Etruscan and Roman earthenware.” In carrying out this invention, the patentee first prepares “ten ingredients,” among which is “bronze powder;” some of these are one chemical substance, whilst others are composed mostly of several chemical substances in certain proportions, and generally calcined together. The substances used are Ayoree, a white earth in North America, gold, aqua regia, copper, oxide of antimony, tin ashes (oxide of tin), white and red lead, smalts, borax, nitre, copperas, flint, manganese, and zaffer. By mixing these “ingredients,” with the exception of the bronze powder, in different proportions, he obtains seven colours, which he names as follows:—Red, orange, dry black, white, green, blue, yellow, and he produces another colour, which he names shineing black, by mixing some of these ingredients and one of the colours, namely, the green.

In applying the bronze powder, grind some of it in oil of turpentine, and apply this by sponge or pencil to the vessels finished, ready for burning, but not quite dry, polish it; heat the ware as high as is necessary for it; afterwards burnish the bronze. “Applying the bronze after the ware is fired basket,” make a mixture in certain proportions of white lead and calcined ground flint, grind them well together; apply this thin with a sponge or brush, flux it, then apply upon it the bronze as before directed.

Shineing black (and other colours) upon red vessels, antique Etruscan vases. These colors are ground with oil of turpentine before applying them to the vessels, and are proceeded with as in the first application of the bronze powder.

[Printed 3d. Repertory of Arts, vol. 7, p. 309; Petty Bag.]

A.D. 1775, September 15.—N° 1096\*.

CHAMPION, RICHARD; (COOKWORTHY, WILLIAM.)—“A discovery of certain materials for making of porcelain.” In enlarging the term of Letters Patent, N° 898, of Cookworthy, assigned to Champion, the latter has to specify the raw materials of which both the porcelain and the glaze are composed, and the

proportions in both cases in which they are used. These are given, and it is stated "that without taking away from the ware "the distinguishing appearance and properties of Dresden and "Oriental porcelains," the proportions may vary from one part of the growan clay to four parts of the growan stone, to sixteen parts of clay to one part of stone. The raw materials of which the glaze is composed differ in number and proportions according to will. The raw materials of which the glaze may be composed are "the stone or gravel aforesaid, and the clay aforesaid, magnesia, nitre, lime, gypsum, fusible spar, arsenic, lead, "and tin ashes (oxide of tin)."

[Printed, &c.]

A.D. 1781, March 28.—N° 1287.

PARKER, WILLIAM.—"A method of making pedestals or supporters for candlesticks, girandoles, chandeliers, candelabrams, lamps, candle shades, epargns, clocks, watches, terms, tripods, vases, urns, busts, and figures, of various materials, and variously ornamented, which would be of great public utility," as follows:—"a base, a die, a cornice or capital, with an ornament "on the top thereof of various forms; some of the pedestals "stand on feet of various forms, and some without feet, and the "whole are composed of metals, wood, crystal, or coloured glass, "ornamented with metals, enamels, paintings, varnishings, or "engravings, and a screw goes through the whole capital to fasten "it together."

[Printed, &c. Rolls Chapel Reports, 6th Report, p. 141; Rolls Chapel.]

A.D. 1782, August 1.—N° 1336.

CREASE, JAMES.—"A pot or pan to be applied to a night "stool, or necessary or other purposes, which would prevent "offensive smells, and be of public utility." The vessel is made of metal, glass, or earthenware, it has a groove or channel either fixed round on the brim, or in the inside or outside, near or at a distance below the brim. "The groove contains water or other "fluid, and the lid drops into it."

[Printed, &c. Rolls Chapel Reports, 6th Report, p. 142; Rolls Chapel.]

A.D. 1783, May 31.—N° 1374.

CARTLEDGE, JOSEPH.—"New invented method of glazing "earthenware."

[No specification enrolled.]

A.D. 1784, February 5.—N<sup>o</sup> 1418.

CARTLEDGE, JOSEPH.—“A new method of glazing earthen-ware.” Instead of “sea salt or metallic substances,” said to be lead ore, or “some preparation of lead,” or tin, “united to ground flints or clay, or both,” substituting “various kinds of earths and stones,” such as “toadstone, Scotch and Guernsey pebbles, the basalts, and other volcanic productions, rag stone, slate, shale, granite, gypsum, fluor spar, mare-stone,” and many others, unknown by name to the inventor, “with all, either severally, or when mixed in different proportions with each other, or with siliceous or argillaceous, micaceous, or calcareous earths or stones, or with all of them, answer the purpose,” and “tho’ not necessary” portions of the metallic substances now used, may be used “with the earths and stones;” slags of furnaces and of pit coal, and the crust “on the bottom of slipkilns,” may be used by themselves, or in conjunction with the before-mentioned substances. It is stated that it would be impossible to enumerate the proportions of each substance, but the quantities of three mixtures are given, namely, one of Derbyshire toadstone and of fluor spar, another of clay, flint, and of striated gypsum, and a third of fluor spar, porcelain clay, siliceous earth, and of calcareous earth.”

[Printed, 8d. Rolls Chapel Reports, 6th Report, p. 169; Rolls Chapel.]

A.D. 1785, May 3.—N<sup>o</sup> 1475.

DE LA MAYNE, THOMAS.—“New invented art of making buttons of burnt earth or porcelain.” “Take any of the com- posts commonly used in making china,” &c., “mould or turn the same when tempered and dried into buttons of any shape or fashion according to fancy,” “burn the same; after which they are glazed with the usual opaque and transparent glazing as used in porcelain wares.”

[Printed, 8d. Rolls Chapel Reports, 6th Report, p. 171; Rolls Chapel.]

A.D. 1786, August 5.—N<sup>o</sup> 1552.

SKIDMORE, JOHN.—“New method of ornamenting all manner of stove grates, stove fronts, fenders, shovels, tongs, pokers, chimney pieces, chimney pannels, the inside of houses and ships, all sorts of Japan wares, all kinds of cabinets and furniture, the outside of coaches and other carriages, and all sorts of china and earthenwares, with foil stones, Bristol stones, paste,

“ and all sorts of pinched glass, lapped glass, and every other stone, glass, and composition, used in or applicable to the jewellery trade.” This is effected “ by drilling, punching, stamping, pressing, rolling, cutting, or by any other method of making shallow or deep holes or grooves ” in the articles to be ornamented, and inserting in them “ any or either ” of the ornamental substances mentioned above, and fixing it with “ any sort of sticking varnish, or any kind of cement or gummy substance that will become hard.” The ornaments may be stuck on the flat surface of the grate, &c., &c., with the sticking substance, and the grate, &c., may be japanned or painted, and if so, it is done in such a manner that the japan or paint may float round the same; or the ornaments may be varnished, japanned, or painted over, and the varnish may be cleared from them by rubbing with pumice, &c., or the surface of the ornament may be covered with sweet or any other oil or grease before applying the varnish all over; the varnish is readily removed from the ornament so treated. These ornaments may be applied “ in collets, settings, or bizels,” in gold, silver, or any other metal, or in ivory, bone, pearl, any kind of wood, leather, or any composition, and fastened to the article by means of rivets, screws, brazing, soldering, or “ any other method.” China and earthenware may be ornamented by drilling, &c., for the ornaments, but the best way is to make the holes for the ornaments before the articles are burned. The ornaments and articles to be ornamented may each have holes through them; and may be united to each other by “ screws, keys, or other fastenings.”

[Printed, 4d. Rolls Chapel Reports, 6th Report, p. 175; Rolls Chapel.]

A.D. 1789, December 8.—N° 1713.

BAYNES, JOHN.—“ An improvement in the construction of soup ladles, tureens, gravy spoons, ladles, and skimmers.” This has for its object “ the more easily separating of mixed fluids,” “ and is effected by constructing such articles with a division or partition within the same, leaving one or more apertures close (or nearly so) to the bottom ” of the ladle, &c. “ in order for the denser fluid to pass through the apertures,” and “ be poured from or taken out on the contrary side.” These ladles, &c., are made of various metals, and “ of glass and pottery ware.”

Printed, 3d. Rolls Chapel Reports, 6th Report, p. 181; Rolls Chapel.]

A.D. 1790, October 16.—N° 1776.

HEMPEL, JOHANNA.—“A certain composition made of earth, and other materials, and the means of manufacturing the same into basins and other vessels, which so manufactured hath the power of filtering water and other liquids in a more cheap, easy, and convenient manner than water or other liquids could then be filtered.” Four compositions are described, and the proportions of each substance is given. The first consists of so many parts of tobacco-pipe clay and of coarse sea, river, drift, or pit sand; second, of the same materials, but in different proportions; third, tobacco-pipe clay, Stourbridge clay, or clay from the surface of coal mines, or any other clay of the same quality.” Windsor, or other loams of the same quality,” and coarse sand as above; fourth, tobacco-pipe clay, coarse sand as above, and burnt ground clay of which crucibles are made.” These are worked up, and moulded or formed, and when of sufficient dryness, the whole outside & inside surfaces are shaved or turned off on a potter’s wheel,” and dried and “burnt or baked in a potter’s kiln.”

[Printed, 3d. Repertory of Arts, vol. 2, p. 230; Rolls Chapel Reports, 6th Report, p. 183; Rolls Chapel.]

A.D. 1796, June 20.—N° 2117.

KEELING, JAMES.—“A substitute for and a preparation that will answer any purpose, for which ceruse, commonly called white lead, and minium, commonly called red lead, or calcined lead, or any other preparation of lead of the like nature, in and about the glazing, and enamelling all manner of cream-coloured earthen wares, commonly called Queen’s ware, white earthen wares, and what are commonly called china glazed wares, and also porcelain and china wares of every kind, in the glazing and enamelling of which, ceruse or white lead, and minium or red lead, or calcined lead, had theretofore been deemed necessary and used, and which is also a substitute for the said articles of ceruse or white lead, and minium or red lead, or calcined or any other preparation of lead of that nature, in and about the making of glass and enamel of every sort or kind, and also for every purpose for which the article commonly called glass of lead was or may be used.” The substitute is said to be lead ore, which is ground with water to a very fine state, and mixed “with the ingredients as are usually used with the white or

"red lead." Before the wares are fired, the crucible or saggar is whitewashed with "a strong wash made of lime and water, to absorb white fumes in firing." The ore is previously prepared by calcining for an hour or two, after white fumes are no longer visible, and used as described.

[Printed, 8d. Repertory of Arts, vol. 6, p. 83; Petty Bag.]

A.D. 1796, July 5.—N° 2127.

CLOSE, VALENTINE, and KEELING, JAMES.—"New-discovered invention and improvements in the construction, and erecting and making of ovens, kilns, and firing places, so as to make and cause a very great saving of coals and fuel, in and about the firing, hardening, and baking all manner of porcelain, china ware, and all manner of earthen wares in every state wherein firing is needful and necessary." These consist, first, of a reverberatory close-mouthed oven, which may be round or square. The mouths or fire-places are at equal distances from each other; they extend some distance outside the shell or wall of the oven, and are fed by an oblong square opening called a feeder, which, "in the act of firing, must in general be closed with a fire-door, or covered." The oven is an arrangement of walls, arches, and bags or tunnels. Second, "A repressing oven;" an arrangement of oven with "two bags or tunnels, and repressor or false bag, which is directly against the mouth or fire-place." Third, a "contort close-mouthed oven;" this is an oven with fire-place as above, and flues running spirally inside the oven, until they arrive "at or near the lower part of the crown or top of the oven."

[Printed, 2s. 11d. Petty Bag.]

A.D. 1796, October 3.—N° 2137.

WEDGWOOD, RALPH.—"New discovered and invented method of making earthenware, whereby the article of earthenware may be made at a less cost than hitherto, to the great advantage of the manufacturer thereof, and of the public." This consists "in casing over inferior compositions with compositions commonly used for making cream-coloured ware, white ware, or china." "Thick bats or laminæ" of the inferior are covered on each side with thin bats of the superior clay; if the edges of the ware are required to be cased, they are surrounded "with a square piece commonly called a wad." Afterwards, the bats

are beat, pressed, or rolled out to the required dimensions "as are proper for the wares to be made from the same." The square bats are made "by pressure from the squeezing box through a dod." For moulding the wares single moulds may be used, but double are preferred of wood, or "wood cased with plaster, of metal," or any material capable of standing much pressure. The press is such as is used for stamping buttons. The glazing is applied dry to the bats; if the edges of the ware after moulding are not properly covered with dry glaze, supply these parts "with wet glaze by means of a pencil;" afterwards stove and burn the ware.

[Printed, 3d. Rolls Chapel Reports, 6th Report, p. 191; Rolls Chapel.]

A.D. 1796, October 3.—N<sup>o</sup> 2138.

WEDGWOOD, RALPH.—"My new discovered and invented composition for making glass upon new principles, whereby great advantages will arise to the public in every instance where such composition is applicable." This is composed of "alkaline salts or borax, either in a state of powder or of solution," the latter preferred; into this are cast "pieces or parts of china or earthenware pitchers, pieces of baked clay, the same being first heated red hot." To these are added "old plaster moulds or calcareous earth, first slacking them in a solution of borax in water," when "borax in solution" is used; also "add siliceous earths and terra ponderosa," all which articles are "ground together and then dried over a slow fire," then fused, and poured into cold water. The proportion of each article used varies: some proportions are given.

[Printed, 3d. Repertory of Arts, vol. 7 (*second series*), p. 324; Rolls Chapel Reports, 6th Report, p. 191; Rolls Chapel.]

A.D. 1796, October 3.—N<sup>o</sup> 2139.

WEDGWOOD, RALPH.—"My new invented stove upon a new principle, whereby great advantages will arise to the public where such an apparatus is applicable." It is "calculated principally for the use of manufacturers of earthenware and china," and "consists in part of a potter's oven of any shape or size, with the fireplaces situated within and adjoining to the interior diameter of the exterior walls, or under the bottom," instead of being placed, as was usual, outside."

[Printed, 2d. Rolls Chapel Reports, 6th Report, p. 191; Rolls Chapel.]



A.D. 1796, October 3.—N° 2140.

PEPPER, JOHN.—“ Plan or mode of building and constructing  
“ ovens and kilns for the firing and burning of china, earthen-  
“ ware, bricks, tiles, and other earths and compositions, whereby a  
“ very material saving will be made in the consumption of fuel, and  
“ other important benefits will arise to the manufacturers, parti-  
“ cularly by a more equal diffusion of heat, and by a more regular  
“ and certain manner of firing such ware and articles over and  
“ above the kilns and ovens then and hitherto made use of.”  
First, the oven or kiln is so constructed, that the flame or matter  
in combustion from the fire is made to pass three times through  
such oven or kiln by means of “ flues, funnels, chimneys, or bags,  
“ disposed at equal distances.” Second, the flues or drafts are  
constructed with dampers or registers, so as to regulate the  
heat.

[Printed, 1s. 2d. Petty Bag.]

A.D. 1799, February 28.—N° 2296.

HICKLING, SAMUEL SANDY.—“ Invention of a method or  
“ methods of improving and beautifying certain vessels and  
“ utensils used for chymical, culinary, and various other pur-  
“ poses.” This consists in “ lining or covering ” iron vessels with  
“ vitreous compounds.” The vitreous compounds are four in  
number, consisting of calcined flint, a “ substance known by the  
“ name of composition amongst the potteries in Staffordshire, or  
“ (in place thereof) of white granite or Cornish china stone,”  
“ litharge of lead,” borax, “ argillaceous earth,” nitre, “ calx of  
“ tin ” and “ purified potash ; ” or, second, calcined flint, red lead,  
borax, calx of tin and nitre ; or, third, composition or Cornish  
china stone, borax, white lead, nitre, “ white marble calcined,”  
argillaceous earth, purified potash, and calx of tin ; fourth, calcined  
flints, composition or Cornish china stone, nitre, borax, white  
marble calcined, argillaceous earth, and calx of tin. These are  
mixed together in certain proportions, and whichever of these  
vitreous compounds are used, the materials are finely powdered,  
mixed together, fused, and reduced to a fine powder, mixed with  
water containing gum or mucilage, and the article coated is dried  
and heated “ so as to fuse or melt the vitreous compounds.”  
Other vitreous compounds besides those above may be employed,

and the vitreous compound may be coloured by enamellers' colors.

Alloys of iron with nickel in various proportions are employed "for chymical, culinary, and various other purposes." The vessels when made are coated with copper by immersing or wetting "over wholly or partially with a solution of copper in muriatic, "vitriolic, nitrous, or other acids," (the nitrous preferred,) afterwards washing with water and coating it with oil or varnish. The "lining or covering is to be changed into brass" by the application of an amalgam of zinc and mercury to the copper lining. Those linings or coverings are applied to vessels of iron in any state, or alloys of the same.

[Printed, 4d. Repertory of Arts, vol. 12, p. 361; Petty Bag.]

A.D. 1800, January 9.—N° 2367.

TURNER, WILLIAM, and TURNER, JOHN.—"A new method "or methods of manufacturing porcelain and earthenware, by the "introduction of a material not heretofore used in the manu- "facturing of those articles." The material is known in Staf- fordshire by the names "Tabberner's Mine Rock," "Little "Mine Rock" and "New Rock." It is generally used as follows: ground, washed, dried in a potter's kiln, commonly called a slip kiln, afterward mixed with a certain proportion of growan or Cornish stone, "previously calcined, levigated, and "dried;" a small quantity of flint similarly prepared is also added, but in different proportions, according to the nature of the ware, and the heat required in burning it.

[Printed, 3d. Repertory of Arts, vol. 12, p. 299; Petty Bag.]

A.D. 1800, January 20.—N° 2368.

SANFORD, ISAAC (*a communication from DR. APOLLOS KINS- LEY*).—"A new method of manufacturing and making bricks, "tiles, and pottery ware in general, and of discharging the "moulds used therein." This consists of a spindle having a number of sections of a screw fixed upon it working in a tub, so as to squeeze the clay out of the tub through holes or spaces in a moveable frame under a platform, into moulds. "The moulds while filling and passing through are supported "on a bed or table composed of a number of frictj

"rollers;" when more than one brick is moulded in the same frame, the division between them is made in three parts. The middle piece tapering serves as a wedge to confine the two parts in their places while the mould is filling. The moulds are discharged by taking out this piece.

[Printed, 5*d.* Repertory of Arts, vol. 13, p. 148; Rolls Chapel Reports, 6th Report, p. 196; Rolls Chapel.]

A.D. 1806, November 6.—N<sup>o</sup> 2986.

VAZIE, ROBERT.—"Certain improvements in the measures and "in the machinery to be used in making bricks and earthenware, "and also improvements in the carriages for removing the said "articles, which said improvements are separately applicable to "various other useful purposes." These are, first, adjusting "the "quantity of coals to be used in burning bricks, and in baking "earthenware," by having on the outside of the coal bushel measure a moveable metal bow, having "three moveable bobs or "pins" suspended from it, at some distance from each other. The centre bob is short, whilst the others are long; the coals allow the bobs in each case to hang clear of them. A straight rule may also be used. Second, in raising water to be used in tempering clay for brick-making and earthenware, in preference to using a pump with one piston or bucket, using "a pump with two or "more pistons or buckets." Third, placing signals upon carriages employed "in the removal of bricks and earthenware," when the carriages are unhired, it consists of a sort of box-shaped thing; at night, this has a light in it, and its top is then shaped like a lantern, conical. Fourth, oil is prepared from blubber by extracting it at steam heat, and when purified is used for the wheels of these carriages. The prepared oil is used "in the "signal lamps."

[Printed, 5*d.* Repertory of Arts, vol. 16 (*second series*), p. 165; Rolls Chapel Reports, 7th Report, p. 193; Rolls Chapel.]

A.D. 1807, February 7.—N<sup>o</sup> 3009.

SPERSHOTT, JAMES.—"An improvement in the manufacture "of earthenware." This consists "in the use of every kind of "grit stone fit for the purpose of manufacturing earthenware." The grit stone "which calcines the whitest, and is the most free "from common earth, lime, salts, acid, or any other impurity, is

"the best." It is calcined, and reduced to powder, or calcined, reduced to a coarse powder, washed with water, and afterwards reduced to a fine powder. It is used in different proportions with the other materials in making earthenware.

[Printed, 8d. Petty Bag.]

A.D. 1809, July 26.—N<sup>o</sup> 3248.

MURPHY, JAMES CAVANAH.—"The manner of designing, making, and forming mosaics and ornaments in the Arabian stile and manner, which I purpose to apply to divers arts and manufactures." This is done as follows:—A drawing or pattern is made "with the greatest possible accuracy, composed of divers geometrical figures;" an exact copy of this is taken, and this is cut into "as many pieces or compartments as there are geometrical figures; these are the tesserae:" "for every dissimilar piece," a mould is made of wood or metal, in which mould is cast "the substance to be formed for mosaics of porcelain," using "the same process in varnishing, colouring, ornamenting, and baking the tesserae, as is commonly used in making porcelain or fine earthenware." "When the tesserae are thus finished," they are joined together, "piece after piece, as in the original drawing, laying them in a strong cement, and filling the joints with the same composition." With these mosaics "foliage, figures, or groups of figures, landscape, cattle, &c. &c.," are formed, and they are employed for ornamenting buildings, and for making "columns, pilasters, tables, chimney-pieces, vases, jars, urns, and divers other articles for floors." Glass mosaics are made and applied in a somewhat similar manner. Paris plaster, mixed with colours, is also employed. There are a vast number of drawings given "in the Arabian style and manner," which are said to be "applicable to the aforesaid mosaics, or for stamping, printing, or painting on manufactures of various kinds, as paper, calico, silk, wool, canvas, glass, porcelain, earthenware, &c. &c."

[Printed, 6s. 4d. Rolls Chapel Reports, 7th Report, p. 207; Rolls Chapel.]

A.D. 1809, September 29.—N<sup>o</sup> 3269.

WHITE, JOHN, the younger.—"A certain substance which is capable of being converted into statues, artificial stone making

“pots, bricks, tiles, sugar baker’s pans, chimney pots, garden pots, and every description of pottery.” This consists of the deposit from “the river Thames, or from the creeks, or openings, or docks, or other cavities or places into which the said river are suffered to enter or flow within or near the cities of London and Westminster, the borough of Southwark, and parts adjacent within the flow of the tide.” When required, it is modified, altered, and improved by the addition “of such proportions of natural clay and sand, or either of them, as may be needful.”

See also Abridgments of Specifications upon Bricks and Tiles, page 12.

[Printed, 3d. Repertory of Arts, vol. 16 (*second series*), p. 260; Rolls Chapel Reports, 7th Report, p. 205; Rolls Chapel.]

A.D. 1810, May 22.—N<sup>o</sup> 3341.

DOCKSEY, WILLIAM.—“Considerable improvements in the process of manufacturing an article commonly called ivory black, and for pulverizing, grinding, or reducing to a subtle and fine powder, all articles capable of a more easy separation of their parts or constituent principles by torrefaction, heating, or calcination, in open or close kilns, ovens, or furnaces, especially potter’s clay, flints, colouring and glazing materials.” As regards “flints, potter’s clays, and colouring and glazing materials,” some are calcined and some dried and passed under stampers or heavy hammers; and when sufficiently small passed between metal rollers, then ground between millstones, passed through a dressing machine in a tight bin; the finer part is then mixed with water in a tub; “the coarser parts are further separated by subsidence, the finer and thinner parts passed through a fine lawn or Cyprus sieve; the water is then drained off, and evaporated by heat.”

[Printed, 3d. Repertory of Arts, vol. 17 (*second series*), p. 143; Rolls Chapel Reports, 7th Report, p. 111; Rolls Chapel.]

A.D. 1811, June 14.—N<sup>o</sup> 3457.

WATERS, RICHARD.—“New method of manufacturing pottery ware.” First, “in the fabrication of various articles of considerable magnitude,” instead of throwing or moulding them on a revolving table, the clay is made into sheets, and then applied upon moulds, and finished “by beating or pressure, or by turning while in a revolving state.” Second, forming “delft

"ware pots and other articles by compression of the clay between suitable moulds." Third, marking or clouding the "Welsh ware," by using a number of pipes instead of one in distributing the colour. Fourth, making earthenware jambs, tiles for facing houses and for paving, hearths, ballastrades, balconies, and bricks, veined, coloured, and variegated, either by the last process, or by "putting together masses of clay differing from each other," and "in the admixture of stony or metallic or other mineral substances, so as to differ in their colors and appearance when baked." Fifth, by this process making "large figures, statues ornaments, armorial bearings, and the like." Sixth, by this process making stone mortars and pestles, cisterns, coffins, worms for distillers use, tiles, with a hook on the back instead of a nob; also with a "higher edge and deeper return than usual."

[Printed, 8d. *Repertory of Arts*, vol. 22, (*second series*), p. 9; *Rolls Chapel Reports*, 8th Report, p. 84; *Rolls Chapel*.]

A.D. 1811, August 7.—N<sup>o</sup> 3473.

GILBERT, THOMAS.—"Certain improvements in machinery for delivering of bricks, tiles, ornaments, pottery ware, and other articles made in moulds, after the moulds are filled." This consists in a machine having two shafts, on one of which are two wheels, one at the top, and another near the bottom of the shaft, while on the other shaft there is only one wheel at the top; this is called the tempering wheel, and is fixed to a shaft, which tempers the clay placed in a cylinder below, and finally discharges it into moulds placed underneath upon a moulding table, having a moveable head. "The lower wheel having just a sufficient number of cogs in it to turn the moulding table one third round, removes the moulds that are filled from under the cylinder, and replaces them with empty ones." The upper wheel "having a deficiency of the same number of cogs, causes the tempering wheel to be at rest while the moulds are changing, and prevents a pressure on the moulding table." There is likewise, "a deficiency of cogs in the lower wheel, which causes the moulding table to be at rest during the time the moulds are filling, so that the horse, or whatever power is applied, does not stop in any part of the operation."

See also Abridgments of Specifications upon Bricks and Tiles, page 13.

[Printed, 8d. *Rolls Chapel Reports*, 7th Report, p. 112; *Rolls Chapel*.]

A.D. 1812, December 16.—N<sup>o</sup> 3623.

HAMILTON, JOSEPH.—“Certain new methods of applying well-known principles in the construction and formation of earthen-ware.” These are, after the clay is in a “fit state to be turned on the wheel, moulded or otherwise worked into vessels;” it is put into a box, and by any fit mechanical means “it is forced out through an aperture provided with a stop or obstacle closing the interior part of the said obstacle. A cap or cover is applied outside this aperture.” The moulds are oiled or greased “previous to each operation.”

[Printed, 6d. Repertory of Arts, vol. 23 (*second series*), p. 140; Rolls Chapel Reports, 8th Report, p. 94; Rolls Chapel.]

A.D. 1813, April 28.—N<sup>o</sup> 3685.

HAMILTON, JOSEPH.—“Improvements on or additions to machines for making bricks, tiles, and earthenwares.” This consists, first, in using a screw with a sufficiently deep thread, “in the cylinder or dod,” “on the principle of the blue makers’ screw, or the pump screw,” by the revolutions of which the cylinder or dod is charged, and the clay, &c. is subject “to the necessary pressure with less inconvenience from air than that which attends the use of a piston.” Second, constructing stopcocks or slides in any number of tubes or pipes, and forcing the clay with the said screw from the dod or cylinder to the stopcocks or slides, where persons admit or exclude the clay, &c., at their convenience, “without stopping the other person or persons who may be working at or about the same dod or cylinder at the same time.”

See also Abridgments of Specifications upon Bricks and Tiles, page 14.

[Printed, 3d. Rolls Chapel Reports, 8th Report, p. 96; Rolls Chapel.]

A.D. 1813, July 23.—N<sup>o</sup> 3724.

MASON, CHARLES JAMES.—“A process for the improvement of the manufacture of English porcelain.” This consists in using the scoria or slag of ironstone pounded and ground in water, in certain proportions, with flint, Cornwall stone and clay, and blue oxide of cobalt.

[Printed, 3d. Repertory of Arts, vol. 24 (*second series*), p. 336; Rolls Chapel Reports, 8th Report, p. 98; Rolls Chapel.]

A.D. 1813, July 31.—N° 3727.

HAMILTON, JOSEPH.—“A new application of earths and “other materials to useful purposes.” Earthen compositions or bodies which are partially or completely vitrified by heat, are formed into convenient sized pieces, with cellular surfaces, and when nearly dry, coated with glazing slips used by potters for earthenware, then burned, and lastly united together, like French burr millstones, by “plaister of Paris,” or some cement, and used for grinding corn, &c.

[Printed, 8d. Rolls Chapel Reports, 8th Report, p. 101; Rolls Chapel.]

A.D. 1817, December 5.—N° 4183.

BUSK, WILLIAM, and HARVEY, ROBERT.—“Certain improvements in the means or mode of making pipes and tubes “of porcelain clay, or other ductile substances.” These are an arrangement of a cylinder having an outlet “of about the size “and form of the pipe or tube purposed to be made.” Another pipe, of about the same size, is screwed on this, called “a neck,” and on the outside of this what is called “the cap” is fitted; this cap has a bar fixed across it, to which is attached “a core or “button.” The clay, &c., being put into the cylinder, a piston is made to enter and press the clay, &c., “out of the cylinder into “the neck, and from thence into the cap, where, passing the bar “which is placed across the cap, it comes to the core or button at “the orifice, and there passing in a continued substance and “course round the core, it comes forth an entire pipe.”

[Printed, 5d. Repertory of Arts, vol. 33 (*second series*), p. 324; Rolls Chapel Reports, 8th Report, p. 127; Rolls Chapel.]

A.D. 1818, April 16.—N° 4247.

CLAYTON, ROBERT.—“A new method of depositing or inserting “certain metals or a mixture of metals in wood, ivory, bone, horn, “paper, and pottery ware, whereby the old and tedious process of “inlaying may be superseded, and the same effects be permanently “produced in a shorter time, and at a less expense than by any “other process now in use.” The design is drawn on the smooth surface of the article, then cut out by chisels or some such instrument, and the metallic fluid is poured and rubbed in to these excavated parts. The metal, or mixture of metals, are such as do not easily tarnish, but fuse at low temperatures, so as not to



injure the articles. They may consist of bismuth, tin, lead, and "regulus of antimony" mixed in certain proportions. When the metal is cool any excess may be filed off, and, lastly, embellished by an engraver if required.

[Printed, 3d. Rolls Chapel Reports, 7th Report, p. 120; Rolls Chapel.]

A.D. 1818, November 10.—N<sup>o</sup> 4305.

POOLE, MOSES (*a communication*).—"The application of known mastics or cements to various purposes, such as modelling statues, making slabs, raising or impressing figures or other ornamental appearances; also to the covering of houses, or in any other matter in which mastic or cement may or can be applied." Frames of wood, iron, or wire, of any size, and in compartments, to receive "tiles of baked clay." Pannels or tablets are formed "upon frames of platted or woven wire."

[Printed, 5d. Rolls Chapel Reports, 8th Report, p. 129; Rolls Chapel.]

A.D. 1818, July 26.—N<sup>o</sup> 4576.

BAGSHAW, SAMUEL.—"A method of forming and manufacturing vases, urns, basins, and other ornamental articles, which have been heretofore usually made of stone or marble, from a combination of materials never heretofore made use of in the manufacture of such articles." This "consists in preparing a shape or nucleus of clay of the desired form of the vase, urn, or basin, or any portion thereof, which is to be baked or burned in the manner of pottery, or otherwise made of cast or wrought iron, or any other fit material, which shape or nucleus so prepared is to be coated or encrusted, both externally and internally, with any proper cement of a plastic nature."

[Printed, 5d. Repertory of Arts, vol. 46 (*second series*), p. 132; London Journal (*Newton's*), vol. 8, p. 26; Rolls Chapel Reports, 7th Report, p. 123; Rolls Chapel.]

A.D. 1820, June 2.—N<sup>o</sup> 4466.

HAGUE, JOHN.—"An improvement in preparing the materials for making pottery ware, tiles, and bricks." This consists in separating from them the stones, roots, and other extraneous matters. This is done "by forcing the materials through holes or slits of a form and size calculated for the passing through of the materials, and at the same time for the detention of the

“stones, roots,” &c. The materials are put into a box having near its lower extremities the slits or holes through which the materials are pressed by a piston, the upper part of which is a rack and it is worked down by a cogged wheel. Below the filtering medium is a box into which the materials pass, and it is stated that “bricks and tiles may be formed by having holes at the bottom of this machine the size of the end of the brick or tile, and cut of with wire as it comes out of the holes.”

See also Abridgments of Specifications upon Bricks and Tiles, p. 16.

[Printed, 9d. Repertory of Arts, vol. 39 (second series), p. 263; London Journal (*Newton's*), vol. 2, p. 21; Rolls Chapel.]

A.D. 1823, November 22.—N° 4871.

BOURNE, JOSEPH.—“Certain improvements in the burning of stone ware and brown ware in kilns or ovens, by carrying up the heat and flame from the furnace or fire below to the middle and upper parts of the kiln or oven, either by means of flues or chimnies in the sides thereof, or by moveable pipes or conductors to be placed within such kilns or ovens, and also by increasing the heat in kilns or ovens by the constructing of additional furnaces or fires at the sides thereof, and to communicate with the centre or upper parts of such kilns or ovens, and also by conveying the flame and heat of one kiln or more into another or others by means of chimnies or flues, and thus permitting the draft or smoke of several kilns or ovens to escape through the chimnies of a central kiln or oven of greater elevation, whereby the degree of heat is increased in the several kilns or ovens and the quantity of smoke diminished.”

[Printed, 5d. London Journal (*Newton's*), vol. 9, p. 244; Petty Bag.]

A.D. 1825, June 21.—N° 5195.

BROOKES, PHILIP.—“An improvement in the preparation of a certain composition, and the application thereof to the making of dies, moulds, or matrixes, smooth surfaces, and various other useful articles.” This consists in making dies, &c. “of a certain combination of siliceous, argillaceous, calcareous, vitrescent, and barytic earths, or other natural earthy compounds, as granite, felspar, clays, marls, flint, cankstone, or any other material used by potters,” which are afterwards vitrified; these

are used for stamping designs, &c. upon articles of leather, horn, &c.; likewise making by pressure between metallic blocks tabular plates with smooth surfaces resembling tiles and slates, "which are vitrified or otherwise; these are used for drawing, writing, painting, and gilding, &c. upon;" such blocks with or without a coating of glaze are used "for chimney pieces and all architectural purposes for which they are adapted."

[Printed, 8d. London Journal (*Newton's*), vol. 11, p. 88; Rolls Chapel.]

A.D. 1825, November 1.—N<sup>o</sup> 5278.

RIDGWAY, JOHN, and RIDGWAY, WILLIAM.—"An improved cock, tap, or valve for draining off liquors." The cock is made of "a composition of alumina silex, quartz, Cornish granite, or other earths, such as are commonly employed in the manufacture of porcelain stoneware," but the composition of which is not claimed; but what is claimed is, first, "the form of the cock and its plug, and the manner of constructing the same;" second, "the introduction of the bolt acting in a groove or recess in the plug to confine or lock the plug," "or a catch or pin falling into a recess in the plug."

The cock, with the exception that the liquor flows from the bottom of the plug, has outwardly the appearance of an ordinary tap. The pieces of which it is composed are first moulded, turned and cut to their desired shape; they are four in number, the long part, the socket for the plug, "a sort of a rectilinear piece making up the square part of the cock in which the bolt that retains the plug is inserted," and the plug. The three first are joined together and "baked or burned in a kiln." The plug having "a groove or recess cut round three-fourths of its circumference for the purpose of receiving the end of the bolt" in the rectilinear piece, and bored through the centre for the flow of the liquor, is burned and carefully grooved so as to make them fit accurately together and be perfectly air tight.

[Printed, 6d. London Journal (*Newton's*), vol. 11, p. 87; Register of Arts and Sciences, vol. 3, p. 282; Engineers' and Mechanics' Encyclopedia, vol. 1, p. 382; Rolls Chapel.]

A.D. 1828, March 13.—N<sup>o</sup> 5626.

JONES, ROBERT GRIFFITH.—"A method of ornamenting china and certain other compositions which I designate lithophanic

"translucd or opaque china." This consists in forming the china or composition of different thicknesses in various parts, so that when held up to the light it will exhibit "the lights and shadows" of the forms intended to be represented as a design or picture." The model of the picture, &c. is described as being first made of wax, "and a cast or mould must be taken from the model in "plaister." This is retouched when required, and a cast taken from it "in plaister or china," which is again retouched; and lastly, a metal mould of pewter, tin, or type metal, or brass, or "other suitable metal should be taken," and "the finishing touches for the sharp outlines and deep shadows may be engraved in the hollows of that metal mould."

[Printed, 4d. London Journal (*Newton's*), vol. 3 (*second series*), p. 319; Register of Arts and Sciences, vol. 2 (*new series*), p. 131; Rolls Chapel.]

A.D. 1830, January 26.—N<sup>o</sup> 5890.

WRIGHT, SAMUEL.—"A manufacture of ornamental tiles, "bricks, and quarries for floors, pavements, and other purposes." First, making these articles of fine clays and firing them until "semi-vitrified."

Second, ornamenting them "in various colours and with various patterns, similar to the patterns on carpets, &c.," by impressing them with the patterns and filling up the impressions with clay, &c., "coloured with metallic oxides." The patterns are impressed by moulding them in moulds of plaster of Paris in metal frames. The articles are reduced to the same thickness by a cutting instrument, worked upon a machine which keeps the articles at a true level.

[Printed, 3d. Repertory of Arts, vol. 10 (*third series*), pp. 95 and 199; London Journal (*Newton's*), vol. 6 (*second series*), p. 79, and vol. 23 (*conjoined series*), p. 465; Mechanics' Magazine, vol. 39, p. 29; Register of Arts and Sciences, vol. 5 (*new series*), p. 100; Webster's Reports, vol. 1, p. 736; Rolls Chapel.]

A.D. 1831, May 18.—N<sup>o</sup>. 6113.

COOPER, ROBERT BURTON.—"An improvement or improvements on a cock or tap, applicable to fluids, liquids, and gases, "and for applying the said improvement or improvements to "other useful purposes." In reference to this subject, it is said to be applicable to "porcelain or earthenware" jars as follows:—A metal ring is fixed by any suitable cement "round the upper part or neck of the jar"; by means of a hinge a metal lid is

attached to this ring; a spherical cover or stopper of the same material as the jar is "fitted and ground into a seat formed for it in the mouth of the jar," and is attached or otherwise to the lid; a screw "passes through the lid, and screws into a projecting piece formed for it on the ring."

[Printed, 2d. London Journal (*Newton's*), vol. 7 (*conjoined series*), p. 86; Mechanics' Magazine, vol. 20, pp. 181, 243, 288, and vol. 22, p. 201; Register of Arts and Sciences, vol. 6 (*new series*), p. 293; Rolls Chapel.]

A.D. 1831, September 17.—N<sup>o</sup> 6162.

POTTS, JOHN, OLIVER, RICHARD, and POTTS, WILLIAM WAINWRIGHT.—"An improved method or process of obtaining impressions from engravings in various colours, and applying the same to earthenware, porcelain, china, glass, and other similar substances." This consists in employing for the above purpose a cylinder printing machine, such as is generally used by calico printers. But when a pattern "cannot be conveniently engraved on a copper roller or by a cylinder machine," a "flat plate is adopted," and the machine in use among calico printers, and known as the flat press, is used. The paper is sized by passing through an arrangement of sizing rollers. The colour box in the cylinder press is heated by steam into a double bottom. The furnishing roller is preferred not to be covered with flannel. In the flat press substituting for "the plank or board on which the copper plate is commonly placed in calico printing" a "steam chest of dimensions adapted to the engraved plate to be used."

[Printed, 7d. London Journal (*Newton's*), vol. 1 (*conjoined series*), p. 126; Register of Arts and Sciences, vol. 7 (*new series*), p. 142; Rolls Chapel Reports, 7th Report, p. 136; Rolls Chapel.]

A.D. 1833, May 11.—N<sup>o</sup> 6422.

SPINNEY, THOMAS.—"A new combination of materials for the manufacture of crucibles, melting pots, and fire bricks." This consists in combining in certain proportions "Stourbridge, or other fit fire clay," "sand as free from lime as possible," and pipe clay. "Great nicety in the proportions is not essential."

[Printed, 3d. London Journal (*Newton's*), vol. 7 (*conjoined series*), p. 97; Rolls Chapel.]

A.D. 1833, December 11.—N<sup>o</sup> 6523.

WISKER, JOHN.—"Certain improvements in machinery or apparatus for grinding covers or stoppers for jars, bottles, and

"other vessels made of china, stone, or other earthenware."  
 "The object of this machine being to grind stoppers or covers  
 "for jars," &c., such as are described in N<sup>o</sup> 6113, 1831, and the  
 improvements are said to consist, first, "in combining into a  
 "machine a series of spindles," and "apparatus for actuating  
 "the same, and also actuating the jars or vessels" when "the  
 "same is used for grinding spherical covers or stoppers of jars,  
 "bottles, &c."

Second.—A similar combination of apparatus "used for grinding  
 "conical covers of jars, bottles, &c."

The spindles are driven by an arrangement of toothed wheels.  
 The spindles are in two parts, capable of sliding upon each other,  
 to allow of "elongation and contraction (as to length) of the  
 "spindle." The stopper or cover is held in the under part. The  
 jars, &c., are placed upon a suspended and moving platform,  
 "when having their stoppers or covers ground into their necks."  
 Sand, &c., is also used with water.

[Printed, 1s. 1d. London Journal (*Newton's*), vol. 14 (*conjoined series*),  
 p. 333; Rolls Chapel.]

A.D. 1835, April 14.—N<sup>o</sup> 6817.

EMBREY, GODWIN.—"Certain improvements in ornamenting  
 "of china, glass, and earthenware." This consists, first, in making  
 a composition differing from the composition known to potters as  
 gold lustre, made with the following ingredients, and in certain  
 proportions, namely, gold, grain tin, nitromuriatic acid, and balsam  
 of sulphur, and spirit of turpentine, and boiled oil, and gum, and  
 applying the same as follows:—Spread upon a plate engraved  
 with the design to be transferred some of the composition, wipe  
 off what is superfluous, cover the plate with a sheet of paper, &c.,  
 and pass them between rollers or otherwise, separate the paper  
 from the plate, cut away all from the design, and spread the design  
 on the surface of the china, &c.; apply pressure, afterwards remove  
 the design, and dust the china with gold precipitated or pulverized  
 with the aid of mercury, added to a preparation of borax, lead,  
 and other substances known as flux, and gently rub it; then fire  
 and afterwards burnish it. Second, to the above composition,  
 adding nitrate of mercury. Third, a composition of precipitated  
 gold, or gold pulverized by mercury, or gold used by gilders of  
 china, &c., oils, gum, and turpentine. Fourth, to the last com-

position, adding nitrate of mercury. These two are applied as the first two.

[Printed 3d. London Journal (*Newton's*), vol. 13 (*conjoined series*), p. 22; Rolls Chapel.]

A.D. 1835, December 3.—N<sup>o</sup> 6938.

POTTS, WILLIAM WAINWRIGHT.—“An improved method or process of producing patterns in one or more colours, to be transferred to earthenware, porcelain, china, glass, and other similar substances.” This consists in obtaining such patterns for the above purpose alone, “from raised or elevated surfaces and not from the engraved cut, indented or depressed parts of the roller, block, or implement employed.” By this method it is stated patterns may be produced in one or several colours, by using other rollers or blocks. “The surface printing machine used by calico printers” is considered “most generally useful,” and a machine is described, also block printing is described.

[Printed 7d. Repertory of Arts, vol. 6 (*new series*), p. 151; London Journal (*Newton's*), vol. 9 (*conjoined series*), p. 158; Rolls Chapel.]

A.D. 1836, May 12.—N<sup>o</sup> 7091.

WILSON, RICHARD.—“Improvements in making or manufacturing fireplaces, slabs, flags, columns, monuments, and cornices such as have heretofore been made of marble.” These are said to be “the use of common clay” in making the above, and “also the use of the mill described for making them,” and “the method of burning them black, and also using black japan or other suitable varnish, in combination with burnt clay, to make a polish to imitate marble; and also the method of making fireplaces, &c., of potter’s clay by the use of the mill.” The mill consists of a revolving shaft with a series of knives so arranged as to press the clay down through the tub and through a mould fixed to the bottom. When the articles are dried, they are placed “in a kiln so constructed that the fire passes below the bottom, up the back part, and across the top, without entering among the manufactured goods,” which are covered each with coal dust to make them black. After firing and cooling they are polished, painted black, again heated and polished, &c.

[Printed, 4d.; Rolls Chapel.]

A.D. 1837, July 10.—N<sup>o</sup> 7401.

CHUBB, WILLIAM. — "Improvements in night commode pans." This consists in a mode of applying to earthenware night pans and chamber pots "a water joint for the covers in order to prevent the escape of effluvia." The vessel is formed with an external ring on its upper surface, and has a groove between this and the inner part of the pan, which is filled with water and receives the lid; from the external ring any overflow of water from the groove must fall into the vessel.

[Printed, 8d. Repertory of Arts, vol. 9 (*new series*), p. 272; Rolls Chapel.]

A.D. 1837, September 14.—N<sup>o</sup> 7433.

DAVIES, RICHARD, and WILSON, ROBERT CHRISSOP.— "Improvement in the manufacture of tiles, slabs, or plates." This consists in rendering their "faces perfectly flat and out of winding, and the edges perfectly square, so that any number may be joined together with the greatest accuracy, by grinding them after they are in the state called biscuit." The slabs held in a frame are pressed with weights placed upon them to a revolving circular stone, and water is applied. When the faces are ground level they are taken off, put on a revolving metal horizontal circular plate, "and a little fine sand and water is applied to smooth the surface." The slab is turned, and the already straight edge is placed close against a flat bar of iron fixed perpendicularly above the revolving circular metal plate, at right angles to it, and the edge to be ground is pressed down to the face of the revolving circular metal plate till squared. The slabs, &c. "are glazed and fixed in the usual way."

[Printed, 8d. Rolls Chapel.]

A.D. 1838, March 14.—N<sup>o</sup> 7592.

DALE, WILLIAM. — "Certain improvements in constructing columns, pillars, bedposts, and other such like articles." These consist in forming each of such columns, &c., "of several ornamental pieces or compound parts of china or earthenware," united, strengthened, and supported by a shaft or rod passing through the whole length of the same, and furnished with screw nuts or other description of fastenings and collars, &c."

[Printed, 6d. London Journal (*Newton's*), vol. 13 (*conjoined series*), p. 277; Rolls Chapel.]



A.D. 1839, April 23.—N° 8042.

SINGER, ALFRED, and PETHER, HENRY.—“Certain improvements in the preparation and combination of earthenware or porcelain, for the purpose of mosaic or tessellated work.” These are, first, “the mode of producing the pieces for the formation of mosaic work by cutting clay, or other plastic material, into rectilinear figures, by means of intersecting wires stretched in a frame.” Second, “the forming of ornamental slabs of mosaic work by cementing together small pieces of porcelain or earthenware of various figures and colors, on slabs of slate, stone, or other suitable material.”

[Printed, 9d. *Inventors' Advocate*, vol. 1, p. 178; *Rolls Chapel*.]

A.D. 1839, May 25.—N° 8080.

CLARK, THOMAS, and CLARK, CHARLES.—“Glazing and enamelling cast-iron hollow ware and other metallic substances.” “Before the application of the enamel the vessel of cast-iron must be well cleaned,” first by steeping it for so many hours in very dilute sulphuric acid, scouring it with sand, and washing it in various waters, afterwards drying it. The enamel is made by first fusing flint and borax together in certain proportions; then taking so much of this compound and of potter's clay, grinding them together in water, and bringing them to a proper consistency, and coating the surface, after which the glaze is dusted on. The glaze composed as follows,—white glass without lead, borax, and soda, in certain proportions, are fused together; so much of this compound is taken and mixed well in hot water with so much soda, after which the solution is evaporated, and the residue dried gives a fine powder. When this powder is finely sifted over the first composition, the vessel is put into a stove and dried at 212° F., “after which the composition is fixed by placing the vessel in a kiln or mouffe,” and gradually heating it up so as to fuse the glaze, after which it is gradually cooled.

By a Disclaimer enrolled the 4th day of April 1840, “other metallic substances” are disclaimed, and “cast-iron” retained.

By a second Disclaimer, enrolled November 20, 1844, the part of the specification “appearing to claim the manner of cleaning,” the vessel is disclaimed.

[Printed, 5d. *Repertory of Arts*, vol. 5 (*enlarged series*), pp. 96 and 99, for disclaimer; *London Journal (Newton's)*, vol. 17 (*conjoined series*), p. 97, also vol. 21, p. 479, for disclaimer; *Mechanics' Magazine*, vol. 39, p. 144; *Inventors' Advocate*, vol. 1, p. 258; *Dowling and Loundes' Reports*, vol. 1, p. 392; *Meeson's and Welsby's Reports*, vol. 12, p. 219; *Rolls Chapel*.]

A.D. 1839, June 4.—N° 8090.

NICKELS, CHRISTOPHER, and GREENWOOD, JOHN DANFORTH.—“Improvements in producing plain and ornamental articles, and surfaces from cements or earths separately or combined with other materials.” These are,—first, “obtaining blocks or articles of artificial marble by a continued or soaking pressure.”

The clay is mixed with colors, ground and pressed for long between calico or canvas in a hydraulic press.

Second, “making grinding surfaces,” by mixing with “Greenwood and Reeve’s cement,” “a portion of emery grit or powder, or cutting sand, equal to one-third or more,” pressing it for long in moulds.

Third, “producing ornamental surfaces by combining a series of cements or other materials in colours in patterns, in the manner of Berlin or Vienna designs, and cutting blocks so produced into thin sheets or slabs for surfaces.”

Fourth, “producing ornamental articles and designs from cement alone, or combined with other materials, similar to arabesque designs.”

Fifth, “obtaining ornamental surfaces by means of moulds and pressure. The clay previously ground is pressed in metallic moulds.”

[Printed, 1s. *Inventors’ Advocate*, vol. 2, p. 18; *Rolls Chapel*.]

A.D. 1839, June 22.—N° 8124.

TURNER, WILTON GEORGE, and MINTON, HERBERT.—“An improved porcelain,” by producing the biscuit prepared for glazing of a much softer and more porous nature, by subjecting it to a much less degree of heat than heretofore used,” and when the glaze is put on subjecting it then “to a greater degree of heat than is usual for the mere purpose of glazing, and effecting the glazing at the same time.” The porcelain is made from kaolin, or Cornish clay made into cream, and passed through sieves, Dorsetshire, or similar clay, treated in like manner, and pure feldspar, all in certain proportions, and mixed with great care. The heating is best conducted in an oven of three stories, or three chambers, one above the other, as described. The passages for the heat are not exactly opposite to each other. One glaze is described, which it is said may be advantageously used;

it consists in certain proportions of flint, calcined and ground in water, or instead, Lyme sand, or of finely ground silica, soft bisque, described, fired up, broken and ground fine in water, gypsum, prepared kaolin, or Cornish clay, all mixed in a certain manner. After the glaze is laid on, the articles are heated to a great heat. It is said that ordinary saggars, composed of Staffordshire marl, would not stand the heat, and the following materials are to be used, in certain proportions, for making saggars, namely, Dorsetshire clay, with "grog, which is formed from setters " crushed between rollers, commonly called a grog mill," not to fine, or grog, " from saggars made after this process."

[Printed, 7d. Repertory of Arts, vol. 13 (*new series*), p. 317; *Inventors' Advocate*, vol. 1, p. 307; *Rolls Chapel*.]

A.D. 1839, June 26.—N<sup>o</sup> 8133.

DUCÔTÉ, PIERRE AUGUSTE.—"Certain improvements in the " art of printing on paper, calicoes, silks, and other fabrics." No reference is made to using these improvements for porcelain or earthenware; but in a subsequent patent, N<sup>o</sup> 8278, reference is made to this. The improvements consist in applying "stone " rollers or cylinders as the printing surfaces," by preference sound lithographic stone. After forming, they are polished, and the drawing made upon them with a composition consisting of the following substances, mixed in certain proportions and certain manner, namely, pure white wax, asphaltum, Burgundy pitch, soap, linseed oil, and turpentine, and the ends coated with the composition, after which it is revolved in a trough, containing, in preference, nitric acid, and of a certain strength. When the drawing is sufficiently in relief, the composition is removed, and it may be sunk deeper where required by a graver. "In case it " be desired to print from such stone rollers by means of sunk " surfaces similar to engraved rollers, in such case the portions " of the surface eaten away will be the design or pattern." The remaining improvement does not apply to printing upon pottery ware, &c.

[Printed, 7d. *Inventors' Advocate*, vol. 1, p. 243; *Rolls Chapel*.]

A.D. 1839, July 3.—N<sup>o</sup> 8142.

YATES, JAMES.—"Certain improvements in making, forming, " or producing raised or projecting letters, mouldings, figures, or

"other ornamental work for external decorations of buildings and other purposes." These are, first, making the above "out of the earthy matters or materials commonly used in pottery or earthenware manufacture, or from any mixture of earthy materials which will allow of the articles being pressed, dried, baked, ground, painted, glazed, and otherwise ornamented and treated according to the purposes for which they are required."

Second, "making of reversed letters, figures, or types for printer's use, from earthenware or potter's clay."

Third, "making, forming, or producing separate letters, figures, devices, or characters in glass, or mixtures of glass and other materials, either opaque or coloured as desired," in moulds by pressure.

Fourth, applying such raised figures, "for the external decorations of buildings, and other purposes to which they are applicable."

[Printed, 7d. London Journal (*Newton's*), vol. 17 (*conjoined series*), p. 80; *Inventors' Advocate*, vol. 2, p. 135; Rolls Chapel.]

A.D. 1839, November 2.—N° 8254.

CUTTEN, JOHN.—"An improvement in garden pots," which consists in forming them with "double sides, made from a single piece of clay, or other earthy matter." The space between is for water, which "filters through the pores."

[Printed, 8d. *Repertory of Arts*, vol. 16 (*new series*), p. 303; *Inventors' Advocate*, vol. 2, p. 292; Rolls Chapel.]

A.D. 1839, November 12.—N° 8267.

WHITE, JAMES.—"Improvements in machinery for moulding clay to the form of bricks and tiles, and also for mixing, compressing, and moulding other substances." These improvements relating to clay consist, first, "The application of the inclined surfaces of a screw to press clay through moulding orifices; the screw works in a cylinder into which the clay is put," a "chamber having an orifice of the form wanted" is attached. "The spiral plane of the screw as it revolves impels the clay into the chamber, from whence it escapes in two streams."

Second, "Stopping the moulded clay while it is being cut."

Third. "Lubricating the clay with water when being moulded, " by pressure through moulding orifices;" this is effected by means of small pipes with stop cocks, which lead into the moulds.

The "other substances" in the title refers to peat.

[Printed, 10d. *Mechanics' Magazine*, vol. 3, p. 369; *Inventors' Advocate*, vol. 2, p. 339; *Engineers' and Architects' Journal*, vol. 3, p. 185; *Enrolment Office*.]

A.D. 1839, November 21.—N° 8278.

DUCOTE, PIERRE AUGUSTE.—"Improvements in printing china, " porcelain, earthenware, and other like wares; and for printing " on paper, calicoes, silks, woollens, oilcloths, leather, and other " fabrics, and for an improved material to be used in printing." In relation to china, &c. this invention consists in employing the impression from lithographic stones; in place of using ink, employing lithographic varnish or boiled oil, &c., and with a composition pressing on to the surfaces of the stones, impressions are obtained upon it which are transferred on to the surfaces of the glazed ware, and are "dusted over with the color powder." Applying zincographic surfaces, using the same means as above. When it is desired to print on biscuit ware, lithographic stones are treated much as is described in N° 8133, so as to get stronger impressions. Sunk surfaces of stone are also employed. Biscuit surfaces are used for designs. Bird lime or vegetable gluten is mixed with the color instead of the potters varnish or boiled linseed oil, &c.

[Printed, 5d. *Inventors' Advocate*, vol. 2, p. 355; *Enrolment Office*.]

A.D. 1839, December 4.—N° 8295.

TREWHITT, HENRY.—"Certain improvements in the fabrication of china and earthenware, and in the apparatus or machinery applicable thereto." These are said to consist in using "dies, or moulds and pressure, one of such dies or moulds being "of the figure of the interior of the vessel, and the other" of the exterior. The moulds are in pairs, and by an arrangement are brought together or separated in the press.

[Printed, 1s. *Repertory of Arts*, vol. 14 (*new series*), p. 345; *London Journal (Newton's)*, vol. 18 (*conjoined series*), p. 297; *Inventors' Advocate*, vol. 2, p. 371; *Enrolment Office*.]

A.D. 1839, December 16.—N° 8319.

WOOD, JOHN.—"A new method or process in the application " and laying on of the substances used in the painting, colouring,

" tinting, and ornamenting of china, porcelain, earthenware, and other wares of the same description, by which such wares can be painted and ornamented with flowers and devices in a much cheaper and more simple and expeditious manner, than by any process now in use, and colours of all or any variety may be painted, shaded, mixed, and blended together in one of and the same design or pattern, and hardened or burnt into the substance of the aforesaid wares by a simple process of firing or hardening in the enamelling kiln." This consists in using dry colours instead of colours "in a liquid or diluted state." The design is drawn with varnish or size, and the dry colours of various shades can be laid on it with a brush, one shade at a time.

[Printed, 3d. *Inventors' Advocate*, vol. 2, p. 165; *Rolls Chapel*.]

A.D. 1840, January 11.—N<sup>o</sup> 8338.

RIDGWAY, JOHN.—" Certain improvements in the moulds used in the manufacture of earthenware, porcelain, and other similar substances, whereby such moulds are rendered more durable." These consist in making the mould with a face of "pitcher," a substance made of flint, blue clay, and china clay, and baked, and a composition back, which may consist of sand, Roman cement, and plaster of Paris, mixed in certain proportions with water, or it may be a metal back instead.

[Printed, 5d. *Repertory of Arts*, vol. 17 (*new series*), p. 280; *London Journal (Newton's)*, vol. 20 (*conjoined series*), p. 98; *Inventors' Advocate*, vol. 3, p. 34; *Rolls Chapel*.]

A.D. 1840, January 11.—N<sup>o</sup> 8339.

RIDGWAY, JOHN, and WALL, GEORGE, the younger.—" Certain improvements in the manufacture of china and earthenware, and in the apparatus or machinery applicable thereto." These consists in a machine with a revolving strap passed around a pulley whereby a pair of moulds or dies, with a bat of clay between them, are advanced under the centre of the press where they at present remain, and by an arrangement the table is forced up "which gives the requisite pressure to the mould," when "the strap again advances as before and conducts the moulds, with the article thus formed, into the room, to be properly dried & finished."

[Printed, 8d. *London Journal (Newton's)*, vol. 20 (*conjoined series*), p. 99; *Mechanics' Magazine*, vol. 33, p. 225; *Inventors' Advocate*, vol. 3, p. 34; *Rolls Chapel*.]

A.D. 1840, January 11.—N° 8340.

RIDGWAY, JOHN, and WALL, GEORGE, the younger.—“Certain improvements in the mode of preparing bats of earthenware and porcelain clay, and of forming or shaping them into articles of earthenware and porcelain, and in the machinery or apparatus applicable thereto.” Instead of hand labour, “passing a lump of clay through a pair of common squeezing rollers or cylinders,” and so forming a bat. “Shaping or forming articles of earthenware or porcelain clays by means of a ‘profile’ used in combination with a revolving mould, or *vice versa*, and also in combination with self-acting feeding and delivering apparatus impelled or driven by steam or other power.”

[Printed, 7d. London Journal (*Newton's*), vol. 20 (*conjoined series*), p. 192; *Inventors' Advocate*, vol. 3, p. 84; *Rolls Chapel*.]

A.D. 1840, February 22.—N° 8391.

KERR, THOMAS.—“A new or improved mortar or cement for building, also for mouldings, castings, statuary, tiles, pottery, imitations of soft and hard rocks, and other useful purposes; and which mortar or cement is applicable as a manure for promoting vegetation, and destroying noxious insects.” The articles relating to this subject are made up of parts of certain compositions, and brick clay, pipe clay, ground granite or freestone, bay salt added to them, as the case may be. The compositions are Nos. 2 and 3. No. 2 consists “of chalk or any similar calcareous substance of a drying and retaining nature, ground into a fine powder.” No. 3 consists “of either tar or pitch or oil or resin, or some other substance of the like bituminous, fatty, or inflammable nature, such as the common Archangel tar, in the same state as imported, coal tar as it comes from the gasworks, the pitch that is manufactured from coal tar after the naphtha has been extracted, whale oil, linseed oil, &c.”

[Printed, 5d. London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 415; *Inventors' Advocate*, vol. 3, p. 131; *Enrolment Office*.]

A.D. 1840, June 17.—N° 8548.

PROSSER, RICHARD.—“Certain improvements in manufacturing buttons from certain materials, which improvements in manufacturing are applicable in whole or in part to the production of knobs, rings, and other articles from the same materials.” These are, first, making the above articles, in which

are included bricks and tiles, "of a clay or a clayey earth alone, " or partly of clay or a clayey earth, and partly flint or feldspar," &c., in a state of powder "by pressure between hard surfaces, " either plain or figured, into solid articles, without any water " being used." This is called "the dry process of pottery and " brick making, in contradistinction to the ordinary process, in " which great quantities of water are used."

Second, "manufacturing of buttons," "with two holes instead " of four, with a groove or channel in the upper surface between " the two holes, so that when sewn to any garment the thread " rests in the groove or channel;" by the above process and " from the said materials and others," and "whether the said " button is manufactured from the materials commonly used in " the manufacture of earthenware and porcelain," and "by those " improvements in manufacturing," or "from any other materials, " and by any other process."

By a Disclaimer and Memorandum of Alteration enrolled 29th December 1845, and a Memorandum of Alteration enrolled 8th May 1852, the second part of the invention is limited to the manufacturing of buttons with two holes and the groove as before described, "from the materials commonly used in the manufac- " ture of earthenware and porcelain," and by the dry process, and it is stated "that any materials other than clays and clay " earths, such as are used by potters, and in the said specification " mentioned, cannot be so beneficially employed."

[Printed, 6½d. London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 123; *Inventors' Advocate*, vol. 4, p. 50; *Transactions of the Society of Arts*, vol. 54, p. 179; *Enrolment Office*.]

A.D. 1841, April 29.—N<sup>o</sup> 8945.

GIBBS, JOSEPH.—"A new combination of materials for making " bricks, tiles, pottery, and other useful articles, and a machine " or machinery for making the same; and also a new mode or " process of burning the same: which machine or machinery, and " mode or process of burning are also applicable to the making " and burning of other description of bricks, tiles, & pottery." The "combination of materials is the employment of Merstham " sand, or pulverized Merstham sandstone, known as firestone " (and which is found generally in beds between the lower beds " of chalk and above the gault clay in the neighbourhood of " Merstham and Godstone, in Surrey, and other places), in com-



" bination with pipe clay, or other argillaceous clay, or with the " other ingredients usually employed." The composition is put into a pug-mill, and forced down through an aperture, where it is cut off by a knife or wire, " as a sufficient quantity for a brick or " tile protrudes;" by an arrangement of an air-pump sand is blown upon the brick or tile. Other arrangements, mounted upon rails of machines, with cylinders or rollers with knives, are described; also means of cutting with frames of cutters or wires. The bricks or tiles after rough drying are trimmed by " arrange- " ments of circular saws or cutters;" also an arrangement of a hydraulic pump for compressing the bricks or tiles, and a kiln, circular or not, divided into a number of compartments or ovens communicating with one another, which communication may be cut off or stopped up; " and each also communicating by flues " with a central chimney," which communication may also be cut off or stopped up as required, are described.

[Printed, 1s. 1d. *Mechanics' Magazine*, vol. 35, p. 366; *Inventors' Advocate*, v. 1. 5, p. 292; Enrolment Office.]

A.D. 1841, June 12.—N<sup>o</sup> 8987.

PALMER, EDWARD.—"Improvements in producing printing " surfaces, and printing china, pottery ware, music, maps, and " portraits." This invention consists in a mode of obtaining printing surfaces by drawing and painting on conducting surfaces, or surfaces made conducting after drawing, &c. thereon, in such manner as to employ the "known process of electrotypes, " or electrography" to obtain plates "with sunken surfaces, from which prints may be taken, as from engraved copper or steel plates or rollers, or "plates with raised surfaces," as "engraved " wood blocks or stereotype plates." The painting is done on a metal plate, the surface of which has been made white with a coating of silver, or some such metal, with a composition of white wax, lard, lamp black, and olive oil in certain proportions; or another composition of wax, ivory black, olive oil, and turpentine. The painting is touched "in the dark parts with plumbago " or other suitable material for making the surface conducting, " and submitted to the well-known electrotypes process."

In making plates with "raised surfaces," the required subject is painted on a darkened or black copper, with a white or light coloured material, composed of sulphate of lead, lard, and wax,

in certain proportions, and if too thick a little olive oil is added. Certain precautions are taken in making the drawing, and when the surface of the plate is covered with the composition, it is touched with plumbago on a brush.

[Printed, *4d.* Repertory of Arts, vol. 17 (*new series*), p. 101; London Journal (*Newton's*), vol. 20 (*conjoined series*), p. 172; Mechanics' Magazine, vol. 36, p. 28; Enrolment Office.]

A.D. 1841, August 21.—N° 9049.

HARVIG, JOHN, and MOREAU, FELIX.—“A new or improved  
“ process or processes for sculpturing, moulding, engraving, and  
“ polishing stone, metals, and other substances.” This is said to  
consist in applying “the spirit of salt or other acid, and the greasy  
“ or fatty matters in combination with the porcelain or other hard  
“ substance, to the working or grooving marble, stone, metals,  
“ and other substances.” “Counterparts of the objects to be  
“ produced” are made of the porcelain earths and baked, then the  
surface of the object to be sculptured “is covered with fatty or  
“ greasy matters; the said counterparts, fixed to any forward  
“ and retrograde mechanism whatever” are “then placed thereon,  
“ and the machine is moved by the wheel and strap.” “The  
“ counterpart penetrates into the greasy or fatty matter or coat-  
ing, and the retrograde movement brings it into contact with  
“ the matter to be sculptured; a very small quantity of spirits of  
“ salt or other acid is introduced between the two bodies, which  
“ acts upon all the projecting or raised parts that the latter pre-  
sents to its action, on removing the greasy matter or coating,  
“ this effect takes place in proportion as the counterpart becomes  
“ incruited, and the operation is performed at the same time with  
“ the same moving power or agent upon an unlimited number of  
“ similar or different subjects.”

[Printed *6d.*; Petty Bag.]

A.D. 1841, November 20.—N° 9161.

VENABLES, JOHN, and TUNNICLIFF, JOHN.—“A new and  
“ improved method of building and constructing ovens used by  
“ potters and china manufacturers in the firing of their wares.”  
This consists in gaining additional space “by setting the outer  
“ and larger circle or circles, or bungs (slacks or tiers) of saggers  
“ close to the sides of the oven, all round the same, upon a ledge  
“ or shelf, or two or more ledges or shelves, or other basis,” cou-

structed "in the oven, between the sides thereof, and the vents " or orifices of the bags or flues by which the oven is heated." No extra quantity of fuel is expended.

[Printed, 7d. Repertory of Arts, vol. 18 (*new series*), p. 347; Mechanics' Magazine, vol. 36, p. 112; Enrolment Office.]

A.D. 1842, April 30.—N° 9337.

BARCLAY, HENRY.—"A composition or compositions applicable as tools or instruments for cutting, grinding, or polishing " glass, porcelain, stones, metals, and other hard substances." This consists of emery, "a variety of corundum," made into a paste with water, and submitted in preference to a low red heat; it may be mixed with "Stourbridge loom," or other suitable material for binding, among others, crocus powder, pounded slate, and pounded Yorkshire stone. The "emery stones" may be moulded to any shape required.

[Printed, 3d. Petty Bag.]

A.D. 1842, July 23.—N° 9424.

AYERS, CHARLES ROBERT.—"Improvements in ornamenting " and colouring glass, earthenware, porcelain, and metals." These are said to consist in colouring the glass, &c. as follows:—First apply any suitable adhesive matter, essence of lavender is generally used; over the surface lay the design, which is open work such as lace upon it, and dust the dry colour over it, it will adhere to the "uncovered parts of the surface." Designs may be cut out in sheets of metal or in paper; such reticulate screens or fabrics are not removed before firing. Causing the surface of articles of glass, &c. to be impressed with the pattern desired, by a wood or other block with adhesive matter, dusting over the colour in a state of powder, and "fixing the colours by heat."

[Printed, 3d. Repertory of Arts, vol. 2 (*enlarged series*), p. 42; London Journal (*Newton's*), vol. 22 (*conjoined series*), p. 380; Mechanics' Magazine, vol. 33, p. 143; Record of Patent Inventions, vol. 1, p. 485; Enrolment Office.]

A.D. 1842, November 15.—N° 9518.

BROWN, ROBERT.—"Improvements in the manufacture of " garden pots." These are making them double, so that water *in the space between* does not evaporate. Two pots are placed *one within the other*, "and the outer pot bent over to the

"top of the inner pot, and firmly joined together." Then two holes are pierced at the top, one to let the air out as the water enters the other. "When filled with water the holes are plugged up."

[Printed, 6d. *Repertory of Arts*, vol. 2 (*enlarged series*), p. 36; *Mechanics' Magazine*, vol. 38, p. 375; Enrolment Office.]

A.D. 1843, January 14.—N° 9587.

FONTAINEMOREAU, PIERRE ARMAND Lecomte de (*a communication*).—"A certain process or processes of combining clay "with some other substances for the producing of a certain " (ceramic paste), capable of being moulded into a variety of "forms, and the application thereof to several purposes." This consists "in mixing certain substances with clays," moulding, (sometimes glazing), and baking the same, to be used "for laying "ways and other similar surfaces," &c. The substances mixed with the plastic, fire clays, kaolins, &c., are "silicious sands, clay, "baked and ground, coal dust or cinders in powder, fluxes or "dissolvants, either in a state of solution or powder, such as the "pure, the carbonated, and the sulphated limes, the metallic "oxides and salts, such as the sulphate of iron (green vitriol), "the per-acetates of iron (pyrolignite of iron), and any other "similar fluxes, sea salts, feldspath, and finally alkaline substances, such as wood ashes, potash, soda, and all the earthy "alkalies;" aluminous schists. These are mixed in proportions according to their natures. Coloured pastes are made with oxides of iron, manganese, and cobalt. Machinery is described for mixing, moulding, and baking the combinations.

[Printed, 1s. 9d.; Petty Bag.]

A.D. 1843, June 3.—N° 9757.

BROWN, WILLIAM.—"Improvements in the manufacture of "porcelain, china, pottery, and earthenware, and which improvements are also in part applicable to the manufacture of paper, "and to the preparation of certain pigments or painters colours." The improvements relating to porcelain, &c. consist in submitting the substance or liquid "called slip," clay, levigated, ground, or mixed, to pressure in a vessel capable of resisting "at least one "hundred pounds on the square inch." A stirrer agitates the material during the operation. "Pressure may be applied without

" the previous abstraction of the air, or the air may be abstracted " without afterwards applying the pressure," but it is preferred to apply both. After this process the slip is filtered and dried on stoves or on chalk. By this process strength is given to the ware, and the boiling may be omitted, which is " a saving of expense."

[Printed, 3d. Enrolment Office.]

A.D. 1843, June 15.—N° 9784.

BOOTH, GEORGE ROBINS.—" A certain improved mode of " applying heat from various combustibles to manufacturing and " other useful purposes," and " its application to the pottery " manufactures " is illustrated. Coke, it is said, is used for the first time, and its use claimed; it is also used with coal, &c., but when much coal is used, larger flues, &c. will have to be used than in the arrangement described, which is " a combination " of hearths, flues, vents, and chambers, forming together an " oven for the application of heat in relation to 'biscuit' or " 'glost' ovens," &c. The chambers, &c. are lined " with mortar " mixed with hard substances," and called " poizee;" this is also claimed.

[Printed, 1s. 6d. Petty Bag.]

A.D. 1843, October 5.—N° 9889.

BOOTE, RICHARD.—" Certain improvements in pottery and " mosaic work." These consist in producing " coloured designs " on grounds of different colours," as " black on white or white on " black." First, the designs are made from a mould as in figuring, and laid on the moulds for making the ware; the ground colour is then put on. Second, the design, cut in paper, parchment, &c. is laid in the moulds and the halves fastened together; the colour to form the ground is poured in, after which the paper, &c. is removed and another colour poured in to fill its place. Third, producing different coloured raised surfaces. The figures in low relief in the inside of the moulds are filled with a composition, the halves of the moulds fastened together, and the slop poured in. Fourth, producing mosaic designs. Compositions " of the re- " *quired varieties of colour*" are fixed inside the moulds, the *halves of the moulds fastened together, and slop suited for the*

ground work poured in. In the three last processes the excess of liquid is withdrawn when the necessary thickness is attained.

[Printed, 3d. London Journal (*Newton's*), vol. 24 (*conjoined series*), p. 267; *Mechanics Magazine*, vol. 40, p. 271; *Engineers' and Architects' Journal*, vol. 7, p. 154; Enrolment Office.]

A.D. 1843, October 5.—N<sup>o</sup> 9901.

WALL, GEORGE, junior. — "Certain improvements in the " methods or processes of manufacturing earthenware, china, " and other similar substances; and also in the machinery or " apparatus applicable to such manufactures." These consist; first, arranging machinery so that a "bat" of clay cut from a feeding vessel falls on to moulds or surfaces so as to be carried on for after operation, without handling. Second, a method of fixing bats or moulds by means of a "counter presser," so as to shape them. Third, applying profiles on levers with movable axes, and employing springs to them or the spindles; also employing "a variable speed for the spindles." Fourth, forming or shaping articles of clay in or upon moulds by the pressure of air. Fifth, the moulding of articles by "expressing the clay into " moulds;" an inside and outside mould is used. Sixth, moulding articles of china, &c. "by means of a rolling pressure." Seventh, separating water from slip by filtration with atmospheric pressure, acting against a vacuum. Eighth, using a mould divided into two "concentric" parts, the force applied first to these parts separately, then collectively. Ninth, a machine whereby a series of engraved plates are combined, so as to be successively printed from. Tenth, "working a continuous stencelling apparatus for printing paper for china," &c.

[Printed, 2s. Petty Bag.]

A.D. 1843, October 18.—N<sup>o</sup> 9912.

GRAHAM, JAMES.—"Improvements in the construction of " pots or vessels and furnaces used in the manufacture of zinc " and other manufactures; and also improvements in the treatment of the ores of zinc in the manufacturing of zinc." In making pots or vessels, the apparatus consists of an outer mould of staves hooped together, having a core for the interior of the pot of several sections and a solid core; the core is taken to pieces after the pot is moulded, and the staves of the outer mould

are slackened and removed. The mixture preferred, although those now used may be adopted, are Ceylon black lead, Stourbridge clay, and potsherds in certain proportions.

[Printed, 2s. 9d. *Mechanics' Magazine*, vol. 40, p. 318; *Repertory of Arts*, vol. 5 (*enlarged series*), p. 1; *Engineers' and Architects' Journal*, vol. 7, p. 199; Enrolment Office.]

A.D. 1843, December 28.—N<sup>o</sup> 9996.

THORNEYCROFT, GEORGE BENJAMIN.—“A machine for rolling, squeezing, or compressing puddled balls of iron, and also for crushing or grinding other substances.” For grinding clay, &c. the materials are passed between “a roller or rollers and a fixed substance.” A machine is described in which is a roller, the axis of which turns in bearings in the framing, and is actuated by any suitable power.”

[Printed, 1s. *Repertory of Arts*, vol. 4 (*enlarged series*), p. 221; Enrolment Office.]

A.D. 1844, January 20.—N<sup>o</sup> 10,020.

BASFORD, WILLIAM.—“Certain improvements in the mode of manufacturing bricks, tiles, and quarries, and certain other articles made and composed of brick earth, and of burning or firing the same, and certain articles of pottery and earthenware.” These are said to be; first, for bricks, &c. using various moulds or matrices, tools, and implements of wood or metal, or wood and metal combined.” Under this head several moulds, &c. are described differing very little from those which have hitherto been used. Second, “certain benches or tables, frames, and implements, and a pressing machine.” These are divided into compartments the size of the article required. Third, manufacturing roofing tiles of the ordinary shape with a smoother surface, also of different shapes, which are claimed. Fourth, manufacturing bricks with grooved joints; also tongues of a large size for cornices, gutters, &c.; also bricks with smooth surfaces. Fifth, the mode of burning bricks, &c., and an oven is described which has an air arrangement so that the heat may be carried under, over, and round about the upper chambers.

See also Abridgments of Specifications upon Bricks and Tiles, page 49.

[Printed, 1s. 6d. *Rolls Chapel*.]

A.D. 1844, January 23.—N° 10,022.

WRIGHT, SAMUEL.—“A manufacture of ornamental bricks  
“and quarries for floor pavements and other purposes.”

[No specification enrolled.]

A.D. 1844, November 2.—N° 10,374.

SMITH, CHARLES.—“New and improved methods in the construction of, and application of, a variety of cooking, culinary, and domestic articles and utensils, some of which are applicable to cleaning and a variety of similar useful purposes.” The parts relating to this subject are as follows :—

First, “the application of the process of enameling to iron chimney pieces and other iron or metal articles of a like description, in plain, tinted, figured, or party colours, or to resemble marbles or other stones or designs, as to the whole or parts of their surfaces.”

Second, “the full use and application of fastenings, by means of joints and locks,” &c. to all kinds of dish covers, and to the covers of jars for general purposes, whether the same be made of wirework, metal, glass, or earthenware.”

Third, “the application of an indented groove to hold water or other matters, formed to the rims or sides of all kinds of jars, dishes, or other vessels, whether made of earthenware, glass, or other suitable materials; also the forming of such like joints to the rims or sides of chamber pots, pans, or receptacles, to receive the bottom rim or flanch formed on the covers thereto; also the forming such like joints to the seats of privies, chamber pails, and such like articles,” with “soapy, fatty, or glutinous matter applied thereto, and the application of the same to all such like joints; also the application of a finely perforated false bottom placed in the inside of flower pots and pans. It will also be seen that the same or such like grooves, troughs, or recesses can be applied for forming borders for gardens, and for surrounding plants, the grooves being filled with lime water or other fluid.”

Fourth, “the manufacture of washing tubs or pans of sheet iron or other metal, and coated with enamel or otherwise.”

Fifth, coating finger plates, knobs to doors, &c. with “plain or party-colored enamels.”



Sixth, the method of attaching glass or earthenware tubes to metal, by means "of a small indented groove formed round each," also applying to the tops of such tubes "a thin slice of talc, enamel, fluor spar, or other non-conducting substance, with a hole in the centre."

[Printed, 4s. 6d.; Petty Bag.]

A.D. 1844, December 30.—N° 10,449.

BETTS, WILLIAM, and STOCKER, ALEXANDER SOUTHWOOD.—"Improvements in bottles, jars, pots, and other similar vessels, and in the mode of manufacturing, stoppering, and covering the same. These are, first, the application of flexible metallic coverings, in combination with discs or stoppers for the covering and stoppering of bottles, jars, pots," &c.

The bottle, &c. has a male helical screw formed on the neck, below which are two annular channels. After corking the vessel the cap is passed over the threads of the screw and also over the annular channels, and a cord is firmly passed over the threads of the screw and over the annular channels. Other modifications of the above are described.

Second, manufacturing the tops or necks of bottles, jars, pots, &c. "of the suitable forms and construction for the application of such flexible metallic coverings." This is done by sets of moulds, during the formation of the article.

[Printed, 1s. 4d. Mechanics' Magazine, vol. 51, p. 22, and vol. 52, p. 456; Patent Journal, vol. 8, p. 98, and vol. 9, pp. 123 and 147; Queen's Bench Reports, vol. 14, p. 363, and vol. 15, p. 540; Enrolment Office.]

A.D. 1845, May 22.—N° 10,675.

HULLMANDEL, CHARLES JOSEPH.—"Certain improvements in producing patterns upon earthenware and porcelain." This consists "in obtaining a floating surface of unmingled colors" (which may be drawn into any desired shape, according to the ordinary process of preparing color for marbling paper) capable "of being taken up by glazed or unglazed ware when immersed therein, and by this means producing marble patterns upon them." A solution of gum tragacanth of a certain gravity, to which a decoction of mucilaginous matter made from "flea seed" (pulicaria or fleawort), or a decoction of linseed, and "slip" (a mixture of pipe clay in water), are added, both in certain proportions; this is called the bath. The colors known as underglaze are employed after additional grinding. All the colors when used

have ox-gall alone, or prepared with alum, &c. The colors are splashed with brushes on to the bath, and the ware in a state of bisque is dipped in it. In using the process on glazed wares, the colors are ground with oil, and "must be those employed for overglaze."

[Printed, 8d. London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 398; Petty Bag.]

A.D. 1845, May 24.—N° 10,687.

SIMPSON, JEREMIAH, and SEDDON, JOSHUA.—"An improved method of constructing the flues and interior arrangements of ovens and kilns used by manufacturers of china and earthenware," which is said to afford more space without an increase of fuel. This is done by several arrangements of ovens having their "flues, or bags as they are usually called by potters," formed immediately within and against the oven walls, and "with main bags and intermediate bags issuing in vents or orifices close to the walls or sides of the ovens or kilns."

[Printed, 7d. London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 405; Enrolment Office.]

A.D. 1845, November 6.—N° 10,930.

COOPER, ROBERT BURTON.—"Improvements in taps or cocks, and in stopping bottles and other vessels." The taps or cocks described are made of earthenware. In one "the spout is connected with the barrel" of the tap, "in such a manner that it can be made to revolve in order to shut off the flow of liquid from the cock, or to open the way through the barrel and through the spout."

An earthenware cock is fixed in an earthenware vessel as follows:—The cock "is made with an enlarged end, which is ground into a recess formed in the vessel." There are projections formed on the vessel, the inner surfaces of which are inclined, and a ring is made to press the surfaces together.

A cock or tap, "having a sliding barrel within the outer barrel," and "having at its end a valve, so arranged that when the cock is required to be shut, the tendency of the pressure of the fluid is to keep the passage shut by the valve."

"The mode of constructing hot plates, so as to be glazed inside." "The plate and lower part is made of china."

Fixing the cover in the mouth of a jar or vessel, as follows:—*On the cover a revolving plate is fixed by a metal plug; in this*

plate are formed inclined or wedge-like projections, which come under similar inclined projections in the mouth of the jar; on revolving the plate the cover is fixed.

In inkstands, &c., "having the upper and under surfaces "spherical in place of flat, and ground together," and keeping the parts together by a spring.

In mustard pots, "applying a ground spherical surface" to "the cover and seat of the cover," and applying the same to jars together with a neck.

Constructing spherical stoppers, which fit into spherical surfaces in the necks of the vessels.

In lamps, "fixing the burner in a spherical stopper," fastened by hooks, "taking under inclined surfaces formed on the mouth "of the vessel."

[Printed, 1s. 7d. Enrolment Office.]

A.D. 1845, November 20.—N° 10,968.

SKINNER, GEORGE, and WHALLEY, JOHN.—"Certain improvements in the manufacture of earthenware pastes and "vitreous bodies, and also a new composition and material for the "same, with certain new modes of combination thereof, which "improvements, compositions, and combinations are applicable "to the manufacture of earthenware pastes, vitreous bodies, "slabs, tiles, and pavement, and various other useful and "ornamental purposes." This consists in combining "chalk or "carbonate of lime in union with silica, flint, or silex." Seven compositions are given, five for ware, and two for glaze. The compositions for ware are combinations of the above substances, and may contain besides some or all of the following substances, namely, Cornwall stone, china clay, ball clay, felspar, "felspar, "or sulphate of barytes;" the wares may be tinted with the oxides ordinarily used. No. 1 and No. 2 composition do not require glazing; 3, 4, and 5, can be glazed with glazes, which do or do not contain lead. Two glazes without lead are claimed; one is made of felspar and chalk, the other of chalk, silica, flint, or silex, Cornwall stone, china clay, ball clay, and felspar, mixed in certain proportions.

See also Abridgments of Specifications on Bricks and Tiles, page 58.

[Printed, 4d. Patent Journal, vol. 1, p. 186; Enrolment Office.]

A.D. 1845, December 4.—N° 10,977.

LESLIE, JOHN.—“Improvements in the combustion of gas.” The object sought is to give a “much larger supply of atmospheric air at the point of ignition of the gas.” “The burner consists of a series of tubes of metal, glass, porcelain, china, or other suitable material, rising out of the supply tube,” the tubes “touch, or nearly touch, each other” at the point of combustion.

[Printed, 5d. Repertory of Arts, vol. 8 (*enlarged series*), p. 20; London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 404; Engineers' and Architects' Journal, vol. 9, p. 221; Patent Journal, vol. 1, p. 47; Enrolment Office.]

A.D. 1845, December 15.—N° 11,005.

FINDLER, THOMAS.—“A new invention or improvements in the construction and operation of certain parts of flint, grinding mills, and other grinding mills, or machinery for grinding.” These are, first, rotating the pan carrying the under stones or pavement. Second, rotating the same in a contra direction to the upper stones or runners. Third, the general application of the above. Fourth, applying the above where the upper stones are in a loose state, and where the upper stones are either in one piece, or in various pieces joined together. Fifth, employing two additional shafts exterior of the pan, and in extension, elongation, or addition below the pan to the original shaft in the centre of the pan.” The centre shaft is divided into two lengths; the lower portion rotating; the pan has a socket, in which the upper portion works, the upper portion “thus producing the rotary motion of the runners and upper stones.”

[Printed, 4d. London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 421; Patent Journal, vol. 1, p. 77; Enrolment Office.]

A.D. 1846, February 25.—N° 11,107.

MADDOCK, JOHN.—“A new and improved method of building and constructing kilns or ovens used by potters and manufacturers of china and earthenware.” This consists in constructing “hardening-on kilns” “with two kilns or ovens one over the other,” so that “the waste heat or fire arising from the lower

“ may be made to heat or fire the upper kiln or oven, whereby a great saving of fuel and time is effected.”

[Printed, 6d. London Journal (*Newton's*), vol. 30 (*conjoined series*), p. 33; Enrolment Office.]

A.D. 1846, March 25.—N<sup>o</sup> 11,149.

SMITH, CHARLES.—“ Improvements in cooking and culinary utensils, and methods of heating and suspending or fastening articles of domestic use, and similar purposes.” Under the above title a vast number of things are described and claimed :—First, “ blocks may be formed for building purposes of a cement made of lime, or its carbonates,” or “ carbonate or sulphate of magnesia, or the sulphates or fluates of lime, or such like material,” mixed by grinding or otherwise ; these are again mixed with ground “ scoria or clinkers, or any kind of clay or aluminous matter, cheap metallic oxides, ores, pyrites, or fritz, or any other similar ingredients, which have a tendency in calcination, when mixed with calcarious matter,” to vitrify. These are mixed with water, and made into masses, which are calcined and afterwards ground. This ground material, when mixed with water, in a short time becomes very hard, and may be used for building and other such purposes, &c. Second, “ making tea or coffee pots or urns in earthenware, with a perforated straining vessel suspended therein,” and applying “ stands, lamps, or heaters to such and similar vessels, formed of like materials,” several ways of doing which are described. Third, making vessels of earthenware “ in two or more parts with a groove around the bottom,” in which to put dry powder, such as flour, whiting, &c., or water, &c., or moist plastic matters, so as to hermetically close such vessels ; this is applied to a night-stool of earthenware ; also, making “ vessels to receive figures attached or placed therein, to form knife rests.” Fourth, lamps for inflammable liquids are made with wicks of biscuit ware ; also an earthenware candlestick, with a recess or match-box with a rough surface, “ for giving friction to the matches.” Fifth, “ lining iron pipes with earthenware or glass tubes, and the application of enamel to their inner surface,” to prevent “ oxidation.” The lining of earthenware, &c., is secured by “ hot liquid pitch, Roman cement, or other suitable setting composition,” run in between the iron and lining. The enamel, of about the consistency of cream, is distributed over the interior of the pipes by means of a sort of trough, with a brush turning inside the pipe ;

afterwards the pipe is withdrawn, and heated in a kiln, &c., and this coating is repeated; or, "apply the glazing materials in a dry " or moist state, on the surface of the first green coat of enamel, " so that once burning serves the purpose."

[Printed, 3s. 7d. London Journal (*Newton's*), vol. 29 (*conjoined series*), p. 366; Rolls Chapel.]

A.D. 1846, May 22.—N° 11,215.

LUTWYCHE, CHARLES THOMAS. — "Improvements in the " manufacture of porcelain buttons." These are as follows. The material, mixed with oil or water, is moulded in moulds warmed by a jet of gas. The buttons thus formed are dried, and subjected to a red heat for two or three hours, are allowed to cool, and the undercut or cavity, "similar to that formed in some pearl " buttons to receive shanks," is cut in them in a lathe. After this the buttons are turned, dressed, fired, and finished as porcelain, or, instead of glazing them, they may be japanned, &c. The shank has a plate attached to it to suit the cavity into which it is placed, and into which it is pressed, so as to spread out and fill up the cavity.

Porcelain buttons are made with porcelain shanks, with holes through them, in moulds.

Porcelain buttons like shirt studs are likewise moulded.

[Printed, 7d. Repertory of Arts, vol. 9 (*enlarged series*), p. 138; Enrolment Office.]

A.D. 1846, May 28.—N° 11,228.

STOCKER, ALEXANDER SOUTHWOOD. — "Improvements in " the manufacture of bottles and other similar vessels, also in " stopping or covering the same, and in the manufacture and " application of the whole or part of the articles to be used." These are as follows:—Forming necks of bottles, &c., with a recess to receive a ring or hoop "of cork, caoutchouc, gutta- " percha, or jintawan." These latter, in preference, vulcanized. In the lip or rim of the bottle are two grooves or nicks for the wire or twine, &c., usually employed for securing the cork.

In place of a cork, a plug "of glass, earthenware, or any other " hard or firm substance, is used, and this is fastened by a piece " of wire, twine, &c."

[Printed, 6d. London Journal (*Newton's*), vol. 41 (*conjoined series*), p. 230. *Mechanics' Magazine*, vol. 57, p. 217; Enrolment Office.]

A.D. 1846, July 23.—N° 11,313.

FOURDRINIER, GEORGE HENRY.—“Improvements in preparing the materials used in manufacturing earthenware and china, and in printing the designs for ornamenting the same.” First, in “sifting or separating the fine portions or particles of the earthy matters, of which the ware is to be composed, from the coarser portions,” a machine is described in which the constructing the straining surface of bars or strips of metal, or other suitable material,” also “of lawn, silk, or other suitable textile fabric, supported beneath by a frame or perforated plate,” is claimed; and also “the exclusive right to form a vacuum under straining surfaces, employed for the purposes above mentioned, either by causing the surfaces, when the machine is in operation, to vibrate, or move up and down in a vertical direction, or by any other means, whereby a partial vacuum or exhaustion can be produced.” Second, printing designs on earthenware consists, “in heating such parts of the press and its appendages as require artificial warmth, by means of steam, hot air, or hot water,” conveyed through pipes, instead of charcoal, &c., as usual; and a machine is described with a frame, and a stationary hollow bed heated as above, with a travelling frame and pressing roller, with a roller for actuating both over a copper plate, previously charged with colour. The copper plate is recharged with colour after each operation, from a colour box kept warm. Also, arrangements for removing the superfluous colour.

[Printed, 7d. London Journal (*Newton's*), vol. 31 (*conjoined series*), p. 251; Petty Bag.]

A.D. 1846, July 30.—N° 11,318.

MALLET, ROBERT, and DAWSON, JOHN SOMERS.—“Certain improvements in railway carriages, and in machinery for working railways, parts of which are applicable to other carriages and the bearings of other machinery.” The improvements relating to this subject consist in “the employment for the journals of locomotive and other revolving axles, and shafts, of compound bearings, formed partly of agate or flint, or other natural stone or mineral, or of glass, porcelain, stoneware, or other like artificial composition, and partly of metal or metals.” *The “glass or agate, or other like material, is to be formed into*

" the usual shape of metallic bearings or pillows, but, in place of  
 " being inserted directly into the cast-iron or other axle box (in  
 " which case they would be liable to fracture), they are made  
 " smaller by a certain amount all round them than the recess of  
 " the axle box which is to receive them, and the space between is  
 " filled up by pouring in fluid fusible metal, such as any of the  
 " alloys of lead and tin, between the axle box and bearing, so as  
 " to fill the intermediate space completely, and make the two  
 " bodies to act and be acted on as one body when in use."

[Printed, 2s. 3d. Repertory of Arts, vol. 17 (*enlarged series*), p. 1; *Mechanics' Magazine*, vol. 46, p. 145, and vol. 47, p. 180; *Practical Mechanics' Journal*, vol. 2, p. 213; Enrolment Office.]

A.D. 1846, November 17.—N<sup>o</sup> 11,453.

MASTERS, THOMAS.—"Improvements in apparatus and means  
 " for cooling liquids, and filtering, and preventing liquids freez-  
 " ing." In these improvements the following relate to this sub-  
 " ject. First, the interior of the vessels (external hollow chambers  
 " with agitating vanes) containing the freezing materials, which are  
 " chemical mixtures," in preference to broken ice, are to be  
 " enamelled.

Second. Jugs and other vessels, with external or internal  
 " chambers for receiving a freezing or cooling mixture.

Third. "An evaporating cooler," which consists of a double  
 " chamber with non-conducting materials, between and in which  
 " is a "cooling apparatus of pewter," &c. There are perforated  
 " shelves and compartments for placing the articles to be cooled  
 " upon. These "are of enamelled iron, or of glazed china or  
 " earthenware;" a syringe withdraws the air from the chamber.

[Printed, 3s. 1d. Patent Journal, vol. 3, p. 3; Enrolment Office.]

A.D. 1846, December 14.—N<sup>o</sup> 11,488.

FORD, CHARLES.—"Improvements in the manufacture of pot-  
 " tery or earthenware, and in the tools, instruments, or apparatus  
 " employed therein, part or parts of which improvements are  
 " applicable to other similar purposes." These are said to be five  
 " in number. First, "forming or producing of pottery or earthen-  
 " ware pots, boxes, saucers, knobs, handles," &c., "in dies,  
 " moulds, or blocks, in conjunction with an apparatus for pressing  
 " or stamping." Second, "the construction and mode of work-  
 " ing the various dies, moulds, or blocks" shown. Third, the



making of "stilts and pins." Fourth, "making cockspurs in  
 " moulds, dies, or blocks, whereby those articles may be produced  
 " of one uniform and regular size and form." Fifth, "the press-  
 " ing or stamping machinery," and the application of the same to  
 " pressing, forming, or fashioning articles in pottery," &c. The  
 dies or moulds for making pots, &c., are divided into "segmental  
 " pieces, which, when placed together, form the sides of a mould,  
 " but are capable of being drawn back simultaneously for the  
 " purpose of allowing the article therein formed to be withdrawn;  
 " the parts which form the top and bottom of the mould are in  
 " this case distinct from the side pieces." Cockspurs, stilts, and  
 pins used in supporting plates one from another in the seggar, are  
 formed in moulds, dies, or blocks formed of two parts; one, the  
 lower part, fixed, and the other is moved by means of a lever; the  
 clay is placed on the lower part, and the upper part is made to  
 descend upon it with force and fill the cavities of both.

By a disclaimer and memorandum of alteration of the 14th  
 June 1847, the title was altered to "Improvements in the manu-  
 " facture of certain tools or instruments called cockspurs, em-  
 " ployed in the manufacture of pottery or earthenware." And  
 the first, second, third, and fifth improvements given above are  
 disclaimed, the part relating to the making of cockspurs being  
 alone retained.

[Printed, 1s. 3d. London Journal (*Newton's*), vol. 31 (*conjoined series*),  
 p. 94; Patent Journal, vol. 3, p. 172; Petty Bag.]

A.D. 1847, July 29.—N° 11,824.

NEWTON, ALFRED VINCENT.—"An improved kiln or oven  
 " for firing porcelain and other similar ware." It is stated that  
*hard* porcelain requires a certain amount of flame for firing or  
 baking it, and to cause pit coal to develop such an amount, the  
 number of fire grates and openings for the flame must be increased,  
 and "the combustion ought to be supplied with a double draft or  
 " additional currents of air." Besides the air through the fire-bars,  
 " it is made to act with energy on the fires in the grates." In  
 the description of the kiln, the air is fed either by "passages com-  
 " municating with the ash-pit from the external atmosphere," or  
 " by an aperture in the front wall of the fire-place," or by  
 " openings in the side walls," or from "the workshop through a  
 " grating communicating with the ash-pit." Besides the arrange-  
*ment of the kilns or ovens*, "the application of coal for heating

" the kilns or ovens in which hard porcelain is submitted to the baking or firing operation," is claimed.

[Printed, 8d. London Journal (*Newton's*), vol. 33 (*conjoined series*), p. 188; *Engineers' and Architects' Journal*, vol. 11, p. 145; *Petty Bag*.]

A.D. 1847, August 4.—N° 11,831.

BOURNE, JOSEPH.—"Improvements in the constructing kilns for burning stoneware and brown ware." These are said to relate to kilns called Chesterfield brown ware kilns, and consist in constructing "stacks of two kilns one above the other, the lower one being heated at two levels," namely, at the bottom and half way up. The heat of the lower kiln passes into the upper, which has one chimney only at the top.

[Printed, 3d. *Repertory of Arts*, vol. 11 (*enlarged series*), p. 177; London Journal (*Newton's*), vol. 33 (*conjoined series*), p. 116; *Patent Journal*, vol. 4, p. 295; *Enrolment Office*.]

A.D. 1847, October 21.—N° 11,912.

RIDGWAY, JOHN.—"Certain improvements in the manufacture of paste boxes, and other similar articles in china or earthenware, or other plastic materials." These consist "in forming or producing such articles with moulds and profiles or dies," and by the "jigger," the "throwing wheel," or any "suitable pressing apparatus." The mode first described is, a core of the shape of the interior of the box is fixed on to the jigger or throwing wheel, and, while it is revolving, a bat of clay is pressed by hand upon it, additional clay is put on to it, and the profile, the shape of the exterior of the box, is pressed against it. The lid is made in the same manner. In the second mode described, the mould is fixed on to the jigger, clay is worked inside the mould, and the profile forms the interior of the box. The third mode described includes a working and a fixed profile. The fourth mode is by means of moulds made in separate parts, representing the different parts of the box; these are joined together, and the clay is placed therein, and pressed by "the ordinary fly press."

[Printed, 8d. London Journal (*Newton's*), vol. 33 (*conjoined series*), p. 324; *Petty Bag*.]

A.D. 1847, November 20.—N° 11,973.

WALKER, THOMAS.—"A new and valuable mode of decorating articles of earthenware and china." This consists, first, in

applying "slop clays or colours to slices, bats, or slabs of soft clay." Second, applying the same to tiles, quarries, &c., in the stiff clay state, when such articles are afterwards pressed in a mould. Third, "all moveable self-adjusting blocks or stamps for stamping or imprinting slop clays or colours on earthenware," &c. "in any stage of the manufacture." Fourth, the use of oil in mixing up such slop clay or colours so employed. Fifth, "the drying of slop clays or colours when applied to bats, slices, or slabs of soft clay, by submitting them to a regular heat applied solely to the surface."

[Printed, 8d. Patent Journal, vol. 5, p. 56; Enrolment Office.]

A.D. 1847, December 31.—N<sup>o</sup> 12,008.

PRATT, FELIX EDWARDS.—"Improvements in manufacturing articles composed of earthenware or china." This "applies to that class of articles which are cylindrical or nearly so on their outer surface, and are formed on the throw wheel or jigger." The "mould is placed upon the throw wheel or jigger," and while rotating a bat of clay, and above this a ball of the same is placed upon it, the pot is shaped, and a guage, which is the improvement, is held in a vertical position over the centre. "The guage embraces both sides of the box, it may therefore be properly termed a double guage."

[Printed, 7d. Patent Journal, vol. 5, p. 175; Petty Bag.]

A.D. 1848, March 8.—N<sup>o</sup> 12,079.

WHISHAW, FRANCIS.—"A certain manufacture of pipes of earthenware, pottery, and glass, and of certain applications and arrangements thereof."

First, "a cluster of pipes, channels, or ducts of earthenware or pottery combined together in the same mass, or within the same external surface."

Second, "the manufacture of pipes of earthenware or pottery by means of a conical die or 'dod.'"

Third, "the manufacture, combination, and arrangement of pipes of earthenware, pottery, or glass, with suitable collars and plugs."

Fourth, "the combining pipes of earthenware, pottery, and glass, by means of air-tight joints," as follows: "The ends of the pipes are shaped and brought together and united by means

" of liquid or semi-fluid cement poured into or placed in a cavity and filling the grooved ring formed in halves in the portions or ends of the pipe," or the air-tight joint consists "of an external collar with a groove similar to that just described, into which cement is run or placed." "A cement formed of asphalt or gutta percha is well adapted for the purpose."

[Printed, 10d. Repertory of Arts, vol. 12 (*enlarged series*), p. 313; London Journal (*Newton's*), vol. 33 (*conjoined series*), p. 181; Artisan, vol. 7, p. 15; Patent Journal, vol. 6, p. 16; Rolls Chapel.]

A.D. 1848, March 14.—N° 12,097.

**COLLINS, FREDERICK WILLIAM MICHAEL, and REYNOLDS, ALFRED.**—"Improvements in the art of ornamenting china, earthenware, and glass." These are, first, applying to pottery paper, size made of French starch, gum arabic, and alum, in certain proportions, and passing it through rollers, for the purpose of transferring patterns, &c., composed of two or more colors on china, &c. Second, obtaining patterns on such paper, or ordinary sized paper, either by hand-drawing or by means of separate blocks, &c., one for each different color, or to be used with "varnish, as the case may be." Third, "transferring in the various manners" the patterns, &c. of two or more colors so obtained from one piece of transfer paper. The various manners are as follows:—The three colors blue, red, and yellow, yet wet, are transferred by pressing the paper on to the biscuit, and when the colors are dried on the ware, damp and remove the transfer paper. If glazed china, or earthenware or glass are to be printed, the surface is first coated over with ordinary varnish, and when this coating is dry, proceed as above. Another way is to allow the colors to dry on the transfer paper. Coat the ware with varnish, and when nearly dry press the transfer pattern upon it, and when the varnish is dry, damp and remove the paper. Or coat the colors when dry on the transfer papers with varnish, and when nearly dry, press the papers upon the ware, and damp and remove the papers. Another way is to roll on oil or varnish on the block, print it on the prepared tissue paper, then dust the color in powder upon it blue; form red and yellow in the same way, and when perfectly dry proceed to transfer them as before.

[Printed, 9d. London Journal (*Newton's*), vol. 33 (*conjoined series*), p. 188; Artisan, vol. 7, p. 56; Patent Journal, vol. 6, p. 4; Enrolment Office.]

A.D. 1848, April 10.—No 12,115.

SPENCER, THOMAS.—“ Certain improvements in machinery or apparatus for manufacturing pipes or tubes from clay or other plastic materials, part or parts of which improvements are applicable to the manufacture of hollow earthenware.” These are said to be, first, the application of the direct action of steam pressure upon clay, &c., for manufacturing pipes, &c., by the use of machinery, or other suitable modification of such, “ having the dies or ‘dods’ for forming the sockets placed underneath the material cylinder.”

Second, constructing die or dies for forming pipes of clay, &c. with sockets, the socket being formed prior to the remainder of the tube, and for the construction of hollow earthenware.

Third, the mechanism for turning over the pipes and also the use of the core drum or mandril, for giving internal support to pipes or tubes whilst being expressed from the material cylinder in combination with a sliding ring.

Fourth, the construction of bends and curves in pipes or tubes, “ either with or without drums or mandrils, direct from the material cylinder.”

Fifth, “ the method of forming or making ‘stilts’ and ‘feet’ for burning upon, and also the peculiar construction of kilns.”

The machinery may be described as follows:—A steam cylinder is fixed and fitted with a steam-tight piston working through a stuffing box; to the lower end of this rod another piston is attached for pressing the clay, &c. placed in the cylinder below called the material cylinder, and through spaces in its lower part, in which are arrangements for a dod or die with an outside case or mould for forming the outside of the socket of the tube or other vessel, working in slides by means of a lever; there is also a core pin of the same dimensions as the pipe or vessel required. A slide valve, in the same manner as the ordinary steam slide valve, admits steam to and from the cylinder. These, with other minute arrangements, constitute the principal machine. There is a cramp or holder fastened by a stud pin, so that it works freely; also a drum or mandril which is placed inside the pipe when it is being expressed from the material cylinder. There is a sliding ring, the outside of which is made to fit the inside of the socket pipe, and fit loose on the outside of the drum. “ When the pipe is being made *this ring is placed inside the socket and slides down the drum,*

" thus preserving the socket in its proper form." " Shoards or boards " are placed " at each end of the drum to prevent the pipe from sliding off when handled." Screws in each end of the cramp " securely hold the pipe whilst it is being turned over." The improvement in kilns consists " in building arches from bag to bag, which may or may not be extended, with the arches " towards the centre of the kiln;" " or it may be done by one arch only, forming thereby a second bottom," " which arches " may be repeated or placed one set above another." The stilts or feet are made as near as may be of the same shape as the vessel or tube to be burned, with or without air-holes. A further improvement is said to consist in grinding, turning, and boring earthenware pipes.

By a disclaimer and memorandum of alteration enrolled the 26th March 1851, certain parts of the above machinery and apparatus were disclaimed, and parts of the specification altered in many places. In the first claim, " placed underneath " is struck out and " of pipes or hollow vessels, and pipes in combination " with " substituted. In the second, a die or dod is disclaimed, and some words inserted. In the third the drum is disclaimed, &c. In the fourth is disclaimed " the making of bends when " made plain, that is without sockets;" but there is introduced, " if with sockets," and " if plain," " then only when effected by " means of curved drums or mandrils." Pipes or tubes are alone to be burnt on stills, and the grinding of pipes is disclaimed.

[Printed, 1s. 1d. Repertory of Arts, vol. 12 (*enlarged series*), p. 378; London Journal (*Newton's*), vol. 35 (*conjoined series*), p. 145; Artizan, vol. 7, p. 57; Patent Journal, vol. 6, p. 31; Rolls Chapel.]

A.D. 1843, February 8.—N<sup>o</sup> 12,465.

TOOTH, WILLIAM.—"Improvements in water closets and in " chimney pieces, in machinery for the preparation of clays and " other materials, and in the manufacture of earthenware articles." These improvements in water closets are said to be several, embracing pans, oblique connecting pipes, discharge pipes, plugs, and valves, &c. which are made of earthenware or glass, although they may be made of iron, &c. Chimney pieces are formed by connecting or joining slabs together " by moulding in one piece portions " which hitherto have been made in two or more pieces so cemented " or joined together;" each of these portions is made of glass, clay, " earthenware, called stoneware." The machinery for preparing

clay consists of a cylinder in which a piston, consisting "of a ring " with radiating ribs or struts which support one or more layer " or layers of gauze wire, lawn, silk, or other suitable fabric of " the fineness desired, works. The piston is depressed to the " bottom of the cylinder, the clay in a fluid state is put in, and " the piston raised by a screw through the top of the cylinder " causes a vacuum beneath, whereby "the finer particles will pass " through the sieve or piston;" a tap at bottom draws off the liquid clay, or it is taken out after the piston is removed. Making "tubes or pipes, and gutters, by forcing the material of " which they are made through dod or force plates, which have " no bridges." The tubes or pipes are made in sections and jointed together, or they are made in one piece by forcing through a dod partly fixed to the bottom of a rod passing down the centre of a cylinder. The other portion of the dod plate is bolted round the bottom of the cylinder. The clay is put in the cylinder and a spur-wheel is made to depress a plunger in it; the materials are "forced out in one piece and may be cut in lengths."

[Printed, 2s. 4d. *Mechanics' Magazine*, vol. 51, p. 141; *Patent Journal*, vol. 7, p. 216; *Enrolment Office*.]

A.D. 1849, May 3.—N<sup>o</sup> 12,599.

BULLER, THOMAS WENTWORTH.—"Improvements in the " manufacture of earthenware." These are first in making cockspurs, moulding a number "simultaneously in one pair of " dies from a sheet of clay" without waste. The base of the cockspurs is an equilateral triangle, which admits of a number being formed together on one plate, from which they are partly moulded; on another plate a series of chamfered holes are drilled, these form the spurs; this plate is fastened to the plunger of a screw press, whilst the other plate is fastened to the bed. This bed plate is moistened with oil, a sheet of clay laid upon it, and covered with a turpentine cloth, the top die is then brought down and pressed, and then raised, and the turpentine cloth removed, the top die brought down a second time, and again raised, "the " lower die, containing the manufactured cockspurs is with- " drawn."

Second, making pins. "The cells or recesses in the die for " moulding these pins are arranged in parallel lines." The top die is a smooth plate, and the working is the same as for cock *spurs*.

Third, making jelly cans, &c. by moulding "instead of throwing them upon the wheel and turning them down on the latter, as "is now the practice." The moulds are a core or lower mould, over which a tubular mould for "forming the outer periphery of the can or jar fits." "The upper end of this mould constitutes a guide for the reception of a plunger," which comes down and drives the clay between the two moulds; by certain arrangements the cans, &c. are removed readily from the moulds.

Fourth, making toy tea-cups by dies. The dies are two, a bottom die and a top die; the bottom die has an opening to receive a spindle, which is connected with a treadle under the bench on which the die is placed; this carries at its upper end a disc which forms the recess in the bottom of the cup; a plunger drives the clay between the moulds. The top die is then raised, the treadle is pressed, causing the disc "to rise and discharge the cups "from the lower mould."

Fifth, "ornamenting of moulded earthenware articles in a "green state." A brass die, a counterpart of the lower die, has any pattern required engraved in its inner surface; this is inked of the required colour, a cup made as above is placed in it, and the plunger brought down upon it. If a pattern is required inside the cup the plunger or inner die is engraved and applied as above.

[Printed, 10d. London Journal (*Newton's*), vol. 37 (*conjoined series*), p. 17; *Mechanics' Magazine*, vol. 51, p. 447; Patent Journal, vol. 8, p. 93; Enrolment Office.]

A.D. 1849, May 22.—N<sup>o</sup> 12,616.

DA COSTA, SOLOMON ISRAEL.—"Improvements in vessels "for holding solids or fluids, and in machinery for manufacturing such vessels." The improvements which relate to this subject are as follows:—A piece of clay is placed in the bottom of a mould the shape of the article required, and a core is brought down, the clay rises up the sides of the core and fills the mould. The core is withdrawn, the mould, if in pieces, is opened, and the article is removed, "and completed by baking or otherwise."

[Printed, 10d. *Mechanics' Magazine*, vol. 51, p. 58; Patent Journal, vol. 8, p. 108; Enrolment Office.]

A.D. 1849, May 24.—N<sup>o</sup> 12,619.

GOODFELLOW, THOMAS, and GOODFELLOW, GEORGE.—  
"Certain improvements in the method or methods of preparing



"plastic materials for manufacturing purposes." First, pressing out moisture from various materials. This is accomplished by forming a vacuum under a "slip, kiln, pan, or bath," on which the materials are placed. The slip kiln has a false bottom, which is exhausted by means of a flow of water, by the condensation of steam, by an air pump, and by a lifting pump. Second, to produce porous tiles, "potters' moulds and saggars, chemical filters, "flower-pot soakers, &c." Clay or marl is mixed with pounded coke, or charcoal, or coal dust, or sawdust, or soot, or some other combustible substance, the water expressed as above, and the articles formed and burnt.

[Printed, 1s. 4d. *Mechanics' Magazine*, vol. 51, pp. 525 and 529; *Patent Journal*, vol. 8, p. 113; Enrolment Office.]

A.D. 1849, June 7.—N<sup>o</sup> 12,642.

MASTERS, THOMAS.—"Certain improvements in the construction and arrangements of apparatus for cooking, for heating and evaporating fluids, and obtaining decoctions and infusions from certain vegetable and animal matters, part of which matters are applicable to certain chemical processes." The improvements relating to this subject are as follows:—First, "The lining saucepans or like culinary utensils with a vessel of porcelain or other analogous material;" and the "employment of an inner vessel of such material" with "a surrounding space." Second, "in the construction of coffee filters," "the use of porcelain, earthenware, and glass, or other vitrified substances as a containing vessel for the infusion, whether such vessel be employed as an inner vessel as a lining, as described with reference to the saucepan" above. Also "the employment of an inner vessel surrounded with water for the purpose of heating and facilitating the infusion of coffee."

[Printed, 2s. 6d. *Mechanics' Magazine*, vol. 51, p. 573; *Patent Journal*, vol. 8, pp. 176 and 187; Enrolment Office.]

A.D. 1849, September 20.—N<sup>o</sup> 12,773.

EDWARDS, DAVID OWEN.—"Improvements in the application of gas for producing and radiating heat." These are, first, "the construction of gas-burners of pipe-clay or other argillaceous material, perforated with holes, and adapted for the production and radiation of heat." The burners are described as bulb-shaped, and are pierced with many holes.

Second, "the construction of stoves of earthenware or other argillaceous material, with a double casing, for the passage of the air, in combination with burners constructed as above described" and arranged in circles or clusters.

Third, "the construction of ovens or cooking chambers of earthenware," &c., in combination with burners as above.

[Printed, 1s. 4d. *Mechanics' Magazine*, vol. 52, p. 238; *Patent Journal*, vol. 8, p. 307; *Enrolment Office*.]

A.D. 1849, September 20.—N<sup>o</sup> 12,775.

LORKIN, JOSIAH.—"An improved instrument or apparatus for beating or triturating viscous or gelatinous substances." This consists of "a cylindrical vessel formed of wood, earthenware, metal, or other suitable material, to the inner surface of which there are affixed three rows of projecting pins or beaters," "five in each row," and so placed "that those of each row come opposite to the intermediate spaces between the beaters of the opposite row." The eggs, &c., are put into the vessel; the lid, having two projections which take into a groove formed in the lip of the vessel on being turned round, is put on, and the vessel is shaken to and fro. Other modifications of the above are described.

[Printed, 9d. *London Journal (Newton's)*, vol. 36 (*conjoined series*), p. 245; *Mechanics' Magazine*, vol. 52, pp. 238 and 309; *Patent Journal*, vol. 8, p. 308; *Enrolment Office*.]

A.D. 1849, September 27.—N<sup>o</sup> 12,789.

BROWNE, WILLIAM, and VEALE, RICHARD ROW.—"Improvements in preparing for pulverization flint stone, china stone, ores, minerals, spars, sands, earths, and other substances." These are first calcining these substances, afterwards immersing them in water, or throwing water upon them, or "steam may be admitted amongst the hot matters."

[Printed, 3d. *Repertory of Arts*, vol. 15 (*enlarged series*), p. 290; *London Journal (Newton's)*, vol. 36 (*conjoined series*), p. 304; *Mechanics' Magazine*, vol. 52, p. 279; *Patent Journal*, vol. 9, p. 4; *Enrolment Office*.]

A.D. 1849, December 15.—N<sup>o</sup> 12,898.

HARCOURT, ROBERT. — "Certain improvements in knobs, handles, and fastenings for doors and drawers, and in fastenings to be used in fastening window sashes, curtain and other rods.

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"and for other like purposes." One of these improvements relates to this subject, and is manufacturing "those knobs which have china, glass, wood, or other ornamental fronts inserted in them," as follows: the internal support or core, the part to hold the spindle, is made of cast-iron, and has a casing of thin sheet-brass; the front of china is placed upon the iron support or core furthest from the spindle, and the edge of the brass casing, "being turned down upon it, secures it in its place."

[Printed, 10d. *Mechanics' Magazine*, vol. 52, p. 408; *Patent Journal*, vol. 9, p. 155; *Enrolment Office*.]

A.D. 1850, June 4.—N° 13,097.

D'ANGELY, PAUL.—"Certain improvements in the construction of privies and urinals, and in apparatus and machinery for cleansing privies, cesspools, and other places, deodorizing the matter extracted therefrom, and rendering it available for agricultural purposes." In these improvements the following relate to this subject:—In privies, below the seat is "a glazed earthenware basin of a conical shape" attached to a large box of wood or iron, the receptacle of the fecal matter to be afterwards treated.

In urinals, the upper part is "to be of brick or stone, the lower part to be of glazed earthenware:" within this lower part is placed "a glazed earthenware basin, covered externally with galvanized iron or zinc, communicating by means of a tube with a cemented brick reservoir;" attached to one side of the reservoir and "in communication with it is an earthenware tube" to "shew when it is full." Cesspools are to be formed "of brick or stone cemented, or of glazed earthenware," within which is introduced, "the deodorizing fluid in the same proportion as mentioned with respect to privies and urinals."

[Printed, 5d. *London Journal (Newton's)*, vol. 38 (*conjoined series*), p. 88; *Mechanics' Magazine*, vol. 53, p. 475; *Patent Journal*, vol. 10, p. 278; *Enrolment Office*.]

A.D. 1850, October 17.—N° 13,288.

BADDELEY, JAMES HENRY.—"Improvements in the manufacture of ornamental articles of earthenware." A bat of clay is first put into a cylinder press and receives an embryo shape of the design by being pressed by a piston through a dod or die, "which may be of any required shape." This is afterwards

placed in a mould in a screw press, and the plunger brought down upon it finishes the pattern; the under part of the press comes out and the article "is discharged with its plain side down-wards."

[Printed, 10d. London Journal (*Newton's*), vol. 39 (*conjoined series*), p. 148; *Mechanics' Magazine*, vol. 54, p. 338; Patent Journal, vol. 11, p. 36; Enrolment Office.]

A.D. 1851, February 24.—N° 13,525.

FÈVRE, GABRIEL DIDIER.—"Certain improvements in apparatus for manufacturing and containing soda water and other gaseous liquids, and also in preserving other substances from evaporation." The "aerating apparatus is composed of a large globe and of a smaller globe, with an arrangement of tubes passing from the one into the other:" the whole is "made of glass, crystal, gritstone, gutta-percha, or other material capable of resisting the action of the acids employed." "The vessel is supported on a metal stand, or of gritstone, china ware, or any suitable substance." Other arrangements of aerators are described.

[Printed, 10d. *Mechanics' Magazine*, vol. 55, p. 196; Patent Journal, vol. 12, p. 27; Enrolment Office.]

A.D. 1851, March 17.—N° 13,558.

MINTON, HERBERT, and HOFFSTAEDT, AUGUSTUS JOHN.—"Certain improvements in the manufacture of faces or dials for clocks, watches, barometers, gas meters, and mariner's compasses, or other articles requiring such faces or dials." These are, first, manufacturing faces or dials of plastic clay or other analogous plastic material, having devices thereon suitable for the purposes to which they are respectively to be applied."

Second, "manufacturing the faces or dials of clocks, watches, barometers, and other articles requiring such faces or dials, from powdered clay, or other analogous compound or substance by pressure, and applying the requisite devices thereto by any of the well-known printing or pointing processes."

Third, "the application of the process now employed in the manufacture of encaustic tiles to the manufacture of faces or dials of clocks, watches, and other articles requiring the same."

In carrying out the foregoing reference is made to the specification of Patents No. 5890, No. 8547, and No. 12,097.

[Printed, 3d. London Journal (*Newton's*), vol. 40 (*conjoined series*), p. 109; *Mechanics' Magazine*, vol. 55, p. 257; Artizan, vol. 9, p. 283; Patent Journal, vol. 11, p. 303; Enrolment Office.]

A.D. 1851, April 26.—N° 13,608.

NASMYTH, JAMES, and MINTON, HERBERT. — “ Certain improvements in machinery or apparatus to be employed in the manufacture of tiles, bricks, and other articles from disintegrated or pulverized clay.” These are, first, an arrangement “ wherein by the employment of a continuous rotatory motion,” as a prime mover, the clay is pressed in a slow and gradual manner so as “ to allow of the escape of the air betwixt the particles,” and to terminate the “ compressive action with the advantage of accelerated speed and the accumulated momentum of the fly-wheel of the machine.” The articles as finished are discharged, and the empty moulds refilled with a charge of pulverized clay.

Second, to facilitate the discharge of air, the machine may be placed in an exhausted chamber.

[Printed 10d. London Journal (*Newton's*), vol. 43 (*conjoined series*), p. 28; *Mechanics' Magazine*, vol. 55, p. 377; Patent Journal, vol. 12, p. 51; Enrolment Office.]

A.D. 1851, May 10.—N° 13,626.

HARDING, HALLEN. — “ Improvements in gas burners.” These are making them of “ pot or fire clay, or other clay,” with a casing of metal. The holes are in the clay.

[Printed, 5d. London Journal (*Newton's*), vol. 40 (*conjoined series*), p. 190; *Mechanics' Magazine*, vol. 55, p. 417; Enrolment Office.]

A.D. 1851, October 2.—N° 13,763.

HODGE, WILLIAM. — “ Improvements in the manufacture of glass, china, porcelain, earthenware, and artificial stone.” These are “ the application of hornstone porphyry, also called elvan or freestone, to the above purposes.” “ Elvan is used alone, or combined with other materials ordinarily employed in these manufactures.” Besides using it in a plastic state it may be used in a dry state, as in using clay in making china articles by dies and pressure, “ known as the dry process of manufacture.”

[Printed, 3d. Repertory of Arts, vol. 19 (*enlarged series*), p. 351; London Journal (*Newton's*), vol. 40 (*conjoined series*), p. 467; *Mechanics' Magazine*, vol. 56, p. 297; Enrolment Office.]

A.D. 1851, October 29.—N° 13,791.

BIDDELL, WILLIAM ADOLPHUS, and GREEN, THOMAS. — “ Certain improvements in moulding, casting, ornamenting, and

"finishing articles and surfaces." These are "by casting, or otherwise, forming a skeleton or frame-work, and filling its cavities or interstices, or overlaying its surfaces with clays, cements, plaster, glass, metal, or other suitable material, and in some cases glazing or varnishing the articles or surfaces so produced." "Letters, ornaments, and blocks for ornamental floors," &c., "may be produced by rolling clay or glass," and stamping them out, &c., and backing the same by frames or otherwise. These improvements and modifications of the same are applied to many purposes named, and "to the manufacture of gates, railings, monumental designs, statues, or other similar purposes."

[Printed, 4d. *Mechanics' Magazine*, vol. 56, p. 376; Enrolment Office.]

A.D. 1851, November 4.—N° 13,803.

BESWICK, ROBERT.—"Certain improvements in the making or manufacturing bricks and tiles, or quarries, and in constructing ovens or kilns for burning or firing of bricks, tiles, and quarries, and other articles of pottery and earthenware." These are combining powdered and sifted seggars, fire marl, and red marl in certain proportions for making bricks, &c., and also cap-shaped bricks and solid angled bricks, and using the same for the above purpose. The kilns are made in the usual way, only the bricks in some cases are perforated and rabbited; grooved, solid angled bricks and cap-shaped bricks are likewise used; the object is to prevent flame and smoke getting at the wares.

See also Abridgments of Specifications upon Bricks and Tiles, page 82.

[Printed, 7d. *Mechanics' Magazine*, vol. 56, p. 379; Enrolment Office.]

A.D. 1851, December 8.—N° 13,850.

PIDDING, WILLIAM.—"Improvements in the treatment, manufacture, and application of materials or substances for building purposes." These relate chiefly to the manufacture of "articles or substances" used "in building or constructive purposes;" various articles are made "from combinations of broken stone, scoria, muriate of alumina, or acetate thereof, mineral earths, fluxes, wood or wood dust, commonly called saw-dust, coal, coke, papier maché, naptha, vegetable fibres, pitch, glue, gutta-percha," &c. Several of these articles are combined together.

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"or separately or individually," with cement now in use, or described as part of this invention. Ordinary bricks, or bricks made of any of the foregoing materials, are coated with pipe or porcelain clay, and glazed, they "appear to be composed of solid porcelain." "Bricks, tiles, slabs, or other figures or substances" are coated with cement clay, containing "twenty per cent. of soda ash or sulphate thereof," or other cements described.

[Printed, 4d. London Journal (*Newton's*), vol. 42 (*conjoined series*), p. 110; *Mechanics' Magazine*, vol. 56, p. 499; Enrolment Office.]

A.D. 1852, March 24.—N° 13,911.

PIDDING, WILLIAM.—"Improvements in the manufacture, preparation, and combination of materials or substances for the production of fuel and other useful purposes to which natural coal can be applied." In carrying out the above, coke is prepared by forcing into its pores powdered coal, coke, or anthracite, and carbonizing it; after which it is reduced to a fine powder, which is placed in moulds, then compressed and baked. If wax, tallow, starch, or pitch are mixed with the coke, powdered coal is dispensed with. Among other appliances this compound may be used for "all articles usually made of delph ware, Wedgewood ware, or porcelain."

[Printed, 4d. *Mechanics' Magazine*, vol. 57, p. 115; Enrolment Office.]

A.D. 1852, April 15.—N° 14,059.

BELTZUNG, FRANCOIS JOSEPH. — "Improvements in the manufacture of bottles and jars of glass, clay, gutta-percha, or other plastic material, and caps and stoppers for the same, and in machinery for pressing and moulding the said materials." These are said to be as follows:—

First, in constructing bottles, jars, &c., "having screws, inscriptions, or other devices impressed on the exterior of their necks or mouth by means of sharp or angular-edged dies worked by pressure."

Second, constructing the same "by means of a machine containing dies guided by slides or levers or equivalent means, in combination with an expanding mandril, or with a conical or taper mandril capable of being forced into the neck or mouth of the bottle or jar."

Third, the manufacture of bottles, jars, &c. "having screws impressed upon their exterior by means of dies in combination with a punch or plunger working in a guide."

Fourth, "the manufacture of screw caps or stoppers for bottles or jars," "by means of dies in combination with a guided punch, having a screw formed upon it."

Fifth, the same "by stamping them out of sheet metal by means of a punch and a die, and a presser die, and then pressing the metal into the groove or thread of a screwed mandril."

The machinery employed in carrying out the above is claimed as being part of the invention.

[Printed, 1s. 6d. *Mechanics' Magazine*, vol. 57, p. 384; *Practical Mechanic's Journal*, vol. 8, pp. 207 and 232; *Enrolment Office*.]

A.D. 1852, April 20.—N<sup>o</sup> 14,080.

RIDGWAY, JOHN.—"Certain improvements in the method or process of ornamenting or decorating articles of glass, china, earthenware, and other ceramic manufactures." These are applying "the art of electrotype or electro metallurgy" for the above purpose applied as "described, or by any other suitable process, provided always that the surface of the non-conducting body is so prepared that the metal deposited thereon shall become alloyed or combined therewith." The invention, however, is said to consist "in the application of certain novel and peculiar media," "whereby such surface may be caused to combine with gold, silver, copper," &c. Before coating with the metals, the vessels are first covered thinly with some varnish, dried and immersed, first in a solution "of phosphorous reduced by bisulphuret of carbon," then in nitrate of silver, and set aside to dry. Instead of this, "phosphoric vapour," or "a solution of phosphorous in sulphuric ether," may be employed; but the method preferred is brushing them over with "an impalpable powder of carburet of iron and sulphate of copper" in certain proportions; afterwards the vessels are "corroded by means of the fumes of hydro-fluoric acid."

[Printed, 4d. *Mechanics' Magazine*, vol. 57, p. 374; *Enrolment Office*.]

A.D. 1852, June 12.—N<sup>o</sup> 14,166.

REID, WILLIAM, and BRETT, THOMAS WATKINS BENJAMIN.—"Improvements in electric telegraphs." These are, first, in en-



closing wires which have been insulated in pipes of wrought or cast iron, wood, slate, or earthenware, "of several forms described, "the principal characteristic of such pipes being that they are "composed of a trough-like portion of a body, and a cap or cover, "which fits upon the same."

Second, enclosing wires when crossing rivers, &c., in "a vertebral chain, consisting of a series of hollow portions of iron, "united together in a manner somewhat similar to that of the "several portions of the vertebra or back-bone."

[Printed, 1s. 6d. *Repertory of Arts*, vol. 21 (*enlarged series*), p. 36; *Mechanics' Magazine*, vol. 57, p. 516; Enrolment Office.]

A.D. 1852, July 13.—N<sup>o</sup> 14,218.

PALM, JOSEPH BARON.—"An improved mode of baking bricks, "tiles, and other pottery or earthenware." This consists in constructing a kiln, the lower part of which is divided into several compartments, communicating "with each other by means of "registers," which may be closed or otherwise at will. "Each "baking chamber has two furnaces with air gratings." There are three tiers of doors one above the other for stacking the ware, in the lowest of which is an aperture for the fuel. "In every baking "chamber there are transverse air channels," and "two or more "air shafts by which to observe accurately the heat and draught" throughout the kiln, &c. In preference the outer walls have air chambers, and the internal walls are provided with air chambers. "The vapour vaults into which the upper part is divided communicate separately with one common chimney," and in the centre of each is a trap-door.

See also Abridgments of Specifications upon Bricks and Tiles, page 87.

[Printed, 6d. *Mechanics' Magazine*, vol. 58, p. 76; Enrolment Office.]

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## PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 11.—N° 330.

**MOORHOUSE, HENRY.**—"Improvements in machinery or " apparatus for cleaning woollen, cotton, or linen rags and waste, " which machinery or apparatus is applicable to cleaning or " tempering clay, or other similar purposes." In tempering clay, the apparatus consists " of a grated or wire cylinder, with a " central shaft with beaters through it, but not attached, as the " shaft and cylinder revolve independently of each other." The cylinder is in an inclined position. The clay is put in by a hopper at the top; water enters " through interstices at the top; " the interstices are cleared of clay " by projections or fallers." The washed material " escapes at the lower end through an " opening left for the purpose."

[Printed, s*q*d.]

A.D. 1852, October 12.—N° 358.

**SMITH, WILLIAM H.**—"Improvements in the manufacture of " lava ware." These are, first, manufacturing such ware from " slags obtained from blast and other furnaces." Second, the application of " a compound reverberatory furnace, consisting of " many consecutive chambers," for " refining and working vitreous " products." Third, " the use of precautionary means to protect " the molten material from sectional polarization, either by heat " or electricity." There are annealing ovens underneath the reverberatory furnace, from which there is an opening or outlet for heat into these ovens.

[Printed, s*q*d.]

A.D. 1852, October 19.—N° 438.

**HARCOURT, JONATHAN, and HARCOURT, WILLIAM.**—(Pro-  
visional protection only.)—"The application of porcelain, glass, or

" earthenware to articles in which or for which those materials  
 " have never heretofore been used." The articles named are  
 " vases or ornaments for window rods, brackets for the same,  
 " certain descriptions of handles for carriage doors, mounts for  
 " organ and desk rails, certain parts of iron and brass bedsteads,  
 " certain parts of gas fittings, spires for birdcages and clock  
 " cases, Venetian blind turns."

[Printed, 2½d.]

A.D. 1852, October 19.—N° 440.

ALLMAN, FENNELL HERBERT.—" Certain improvements in  
 " the manufacture and construction of brushes." These are, em-  
 " ploying " china, glass, earthenware, porcelain, and metal covered  
 " by such materials, or by enamel," in " constructing the frames,  
 " handles, or backs."

In the provisional specification fluids pass from the back to the  
 front of the brush, but no mention is made of this in the complete  
 specification.

[Printed, 4½d.]

A.D. 1852, October 26.—N° 524.

ROWLEY, CHARLES.—" Certain improvements in nails." These  
 are, first, " ornamenting the heads of nails by the application of  
 ' glass, coloured or plain, which glass may be cut in imitation of  
 " precious stones, or otherwise ornamented."

Second, " in the application to the same purpose of stones,  
 " porcelain, ivory, bone, pearl, tortoiseshell, leather, wood, gutta-  
 " percha, vegetable ivory, and other suitable substances."

Third, " in ornamenting the heads of nails by piercing and  
 " clipping them in various ways."

Fourth, " in ornamenting the heads of nails by enamelling  
 " them."

Fifth, " in applying underneath the afore-mentioned pierced and  
 " clipped heads any suitable material of any desirable colour, such  
 " as leather, ivory, bone, &c."

[Printed, 5½d.]

A.D. 1852, October 30.—N° 571.

BALE, THOMAS SANDERS, and SANDERS, FREDERICK  
 GEORGE.—(*Provisional protection only*).—" Certain improvements  
 " in machinery or apparatus for grinding and mixing clays or

"other plastic materials." These are, first, in grinding clays, "placing on and around the floor of the pan a number of "perforated plates or grids, on which the grinding rollers revolve, "and through which the material is discharged at every revolution of the rollers." Second, treating "clays, marls, &c., with "diluted sulphuric acid." Third, filtering off "the surplus "water," by "running the liquid or paste material into bags or "filters, then draining it, and completing it for use either by "pressure or heat."

[Printed, 2½d.]

A.D. 1852, November 6.—N° 659.

GOSNELL, JOHN; GOSNELL, EDWARD; and GOSNELL, CHARLES.—"Certain improvements in brushes." Of these improvements there are several, but principally relating to fixing the bristles of brushes. The improvement connected with this subject consists in "the introduction and use either of porcelain "or gutta percha label plates or tablets for brushes," "either "plain, printed, or ornamental, and either in colors or otherwise," "attached to the back or handle of certain brushes."

[Printed, 5½d.]

A.D. 1852, November 17.—N° 771.

WAY, JOHN THOMAS, and PAINE, JOHN MANWARING.—"Improvements in the manufacture of burned and fired ware." These are the use of natural earths, mineral beds or strata, which contain soluble silica in considerable quantities, and the admixture of these earths (or of soluble silica itself) in different proportions with clay, and with or without the addition of lime and other alkalies for the production, when burned, of bricks, tiles, pipes, firebricks, and of artificial stone for various purposes, and porcelain, in place of using "powdered flint, or other "insoluble silica at present employed." The natural earths, mineral beds or strata above referred to occur "in Surrey (and "will probably be found in other parts)" "as the base of the "chalk hills," and elsewhere. The soluble silica should amount to at least ten per cent., and is ascertained by boiling the ground mineral in caustic soda, and on acidifying the solution, the silica precipitates.

[Printed, 3½d.]

A.D. 1852, December 16.—N° 1076.

HEALEY, JOHN.—“The application of glass and enamel to the  
“ flyers and other parts of machinery used in the preparing,  
“ spinning, doubling, winding, warping, dressing, and weaving  
“ of cotton, wool, flax, silk, and other fibrous materials.” The  
enamel preferred is composed of “fine ground glass,” “calx of  
“ lead,” “calx of tin,” and “salts of tartar” in certain propor-  
tions, and made into a paste; the articles are coated with it, and  
exposed to heat. Besides coating the flyers, other parts of the  
above machinery are to be coated, namely, “in drawing frames or  
“ drawing machines,” “the guide pins which conduct the slivers  
“ to the rollers,” and “also the funnels through which the slivers  
“ after leaving the rollers pass;” coating “throstle or water  
“ frames” and “doubling frames;” “in winding machines,”  
“making the skewers which hold the cops of yarn of steel, and  
“ coating them with enamel;” “in warping machines,” “enam-  
“ elling the eyes of the hecks;” “in dressing machines,” “coating  
“ the small rollers which work in the size with enamel, making  
“ them of wrought iron;” “in weaving,” “enamelling the tongue  
“ or skewer upon which the cap is fixed in the shuttle.”

[Printed, 3½d.]

A.D. 1852, December 22.—N° 1131.

ROBERTS, JOHN.—“Improvements in apparatus for pre-  
“ serving animal and vegetable matters, and for cooling wines  
“ and other liquids.” This consists “of a circular earthenware  
“ dish provided with a flange, in the upper face of which a half  
“ round annular groove is formed. In this groove a dome-shaped  
“ cover is set, and water is poured in the groove.” The sides,  
flange, and cover are minutely perforated to admit air. A pierced  
tray resting on a ledge carries “the matters that are put into the  
“ cooler.” The cover is made hollow at the top to hold water.  
Modifications of the above are described.

[Printed, 6½d.]

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## 1853.

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A.D. 1853, January 1.—N° 7.

BROUGH, JOSEPH.—“A new manufacture of a vitrified sub-  
“ stance, and its application alone or in combination with mineral,  
“ *earthy, and plastic substances*, to various useful purposes in the

"arts, and for certain other new applications of known plastic substances." The vitrified substance or compound called "opaline" is made by fusing with a fluxing material, of which several are named, but borax is preferred, fragments of porcelain, china, parian, &c., previously crushed, and running the fused mass into cold water, and afterwards taking a portion of this, or a portion of the materials which enter into the composition of porcelain, china, &c., and adding a suitable quantity of glass or any fusible minerals or salts, and fusing the whole together, when it may be cast into moulds, &c. Color may be given by adding metallic oxides. Bricks and blocks may be faced with opaline, poured on in a fluid state. An opaline imitative of stones and marbles is made by making it in masses, breaking these masses into pieces, and throwing them into a vat of "stained or colored" opaline composition in a fluid state," allowing the mass to harden, and cutting it into slabs. There are other modes of varying the appearance of these compounds. Applying parian ornaments or plain surfaces, in the soft or plastic state, to slabs, bricks, or blocks, in preference, previously baked or fired "by means of a slip or vitreous cement," afterwards firing or burning. Making "coffins, sarcophagi, and other like receptacles" for the dead, from porcelain, parian, and earthenware."

[Printed, 5½d.]

A.D. 1853, January 25.—N° 183.

RÉMOND, AMÉDÉE FRANÇOIS.—(*A communication.*)—(*Provisional protection only.*)—"A method of ornamenting articles of "glass, enamel, and earthenware." The design required is taken from the engraved plate by means of a fusible alloy, which may be of lead, tin, and bismuth in certain proportions. A strong solution of gelatine in hot water, mixed with a little soap, is poured upon the impression or the alloy, and when dry the gelatine is stripped off. This gelatine plate is inked, "dipped in water, and afterwards pressed flat upon the article to be ornamented," and allowed to dry upon it, by placing the article in "warm water, "the gelatine dissolves, and leaves the impression on the article." The gelatine plate may be made larger than originally by moistening it with water after it has been dried at a certain temperature, "when it will expand uniformly," or it may be made smaller by *drying it at a low temperature, and dipping it for a short time in*

alcohol. To produce a sunk design the ink is made of oxide of lead mixed with oil. After the article is heated and cooled it "is thrown into dilute nitric acid, which dissolves out the portions of the glass enamel, &c., combined with the oxide by heat." Colored designs are made by metallic oxides, &c.

[Printed, 24d.]

A.D. 1853, January 26.—N<sup>o</sup> 197.

ADOR, NICOLAS FRANCISQUE.—"Improvements in preparing plastic materials to be used in the manufacture of fired wares and for other purposes." "Pulverized amianthus" (asbestos?) is mixed with a solution of "silicate of soda, or potash, or lithine" (lithia?) so as to form a thin paste; this is left to soak for some hours, with stirring. The moulds are covered with unsized paper. First a coating of the thin paste is put on, and dried; the slip is thickened by "amianthus," and applied by a trowel equally thick and smooth. These vessels are allowed to dry for some hours, and detached from the moulds, dried in an oven, afterwards plunged in a vessel of dilute sulphuric, nitric, muriatic, or hydrochloric acid, until effervescence ceases, when they are washed with water, drained in a current of air, heated in an oven, and afterwards baked. For building purposes the articles are not baked, but merely dried as above. When the interior walls of the building are coated with the aforesaid substance and dried, "some pounds of sulphur must be burnt, the sulphurous gas neutralizes the alkali, and the sulphite" issues from the pores of the "fireproof coating" "like mould, and is brushed off with water." Another process, "less complicated." Bricks are made "with liquid silicate of soda," plunged for a day in dilute muriatic acid, then dried and baked to a red heat, reduced to a fine powder, then mixed with "a third of its volume of pulverized amianthus" and a fifth of ordinary kaolin in dry powder; these substances are mixed with water, moulded, dried for some days in the open air, afterwards in an oven, and burnt in "a furnace heated with wood, coal, or coke."

[Printed, 4½d.]

A.D. 1853, January 31.—N<sup>o</sup> 254.

LIGHTFOOT, THOMAS.—"Improvements in glazes for pottery or other similar materials." These are "composing a glaze for

“ pottery, or other materials, in which silicated alkali, or solution  
 “ of silicated alkali enters as a constituent or component part,  
 “ and whereby the use of borax is altogether, or in part, dis-  
 “ pensed with.” The silicated alkali is made by fusing together  
 clean dry sand and carbonates of potash and soda or pearl ash,  
 instead of carbonate of potash; afterwards it is ground and  
 mixed with the other ingredients forming glazes generally, but  
 without borax generally, though sometimes with borax, but in less  
 proportion.

[Printed, 2½d.]

A.D. 1853, January 31.—Nº 265.

PINKERTON, JOHN.—“ A new mode of applying and combining  
 “ ornamented glass in the manufacture of useful and ornamental  
 “ articles.” This is applied to several articles named, and it is  
 stated it may be applied to “ those articles which are formed with a  
 “ stem, such as a centre dessert dish,” in the following manner:—  
 “ Take a piece of glass of the required shape for the stem, and  
 “ having painted, cut, or engraved,” an ornamental device upon  
 the inner surface, place a piece of polished metal inside the tube,  
 and secure “ the metal and glass together, as also the upper part  
 “ of the dish to the stem thus formed, by means of cement, or in  
 “ any other convenient manner.” A modification of the above  
 process is applied to various purposes.

[Printed, 8½d.]

A.D. 1853, February 10.—Nº 361.

BREESE, CHARLES (of the firm of Breese and Hayward).—  
 “ Improvements in ornamenting papier maché, japanned iron,  
 “ china, and other hard or bright surfaces, with gold.” These  
 are as follows: the polished surface to be ornamented is coated  
 with a solution of isinglass, and while wet gold leaf laid on, and  
 the whole dried. An impression on sized tissue paper, with a  
 composition or color capable of resisting acid or water, as the  
 case may be, is transferred on to the gold and the paper removed  
 by damping. When sufficiently dry the superfluous gold leaf is  
 removed by rubbing with a little water, or sometimes nitro-  
 muriatic acid, which dissolves the gold not covered by the pattern.



The pattern is removed by a little turpentine, leaving its appearance in gold. The composition recommended is of asphalt, oil, and gold size.

[Printed, 2½d.]

A.D. 1853, March 29.—N° 755.

PYM, JOHN.—“Improvements in the permanent way of rail-ways.” These are, “the construction of hollow perforated sleepers of earthenware, slate,” &c., with perforations in “the bottom or sides, to allow the water to enter the interior chamber thereof, and to run off at either end.” Also forming “the sole of the chair sufficiently long to overlap the sides or edges of the sleeper, and secure the ends of the sole by passing a bolt from side to side through the sleeper and fastening the same by a nut, pin, or rivet.”

[Printed, 2½d.]

A.D. 1853, April 4.—N° 803.

STEIGEWALD, FRANCIS.—(*Void because of not filing a complete specification.*)—“Improvements in the manufacture of glass and porcelain.” “Cleansing flint, spa, quartz, and other materials” from metals by putting them “in heaps of about a ton on a wood floor, and on every heap” sprinkling a certain quantity of concentrated muriatic acid, turning the heaps over with wooden shovels, afterwards washing well with water, and drying.

[Printed, 2½d.]

A.D. 1853, April 6.—N° 828.

JOHNSON, WILLIAM.—(*A communication.*)—“Improvements in the production of ornamental surfaces in glass, porcelain, metals, and similar materials.” These are said to be, first, “the general arrangements of apparatus and means for producing ornamental surfaces,” which appear to consist of a die with a raised rim, which “cuts out the glass or substance to the required size and shape,” and impresses a device upon it, “such as a rose.” This is done after it has been made plastic in an enamelling furnace. Second, “producing ornamental surfaces by pressing one colored material into another, and afterwards

"removing the superfluous portions" by grinding, afterwards polishing. Third, "ornamenting surfaces by inlaying one within the other, and afterwards uniting the same by heat."

[Printed, 5½d.]

A.D. 1853, April 11.—N° 868.

CAMPBELL, WILLIAM MUIR.—(*Provisional protection only*).—"Improvements in earthenware kilns." The kiln is circular, has a single furnace under the bottom, with a central vertical flue, from which "a series of horizontal flues radiate outwards, and "carry the heat directly through the mass of articles," or the furnace has two side elbow flues in addition to its direct radial flue, so that the central passage may be closed and the two elbows opened. But instead of one, four furnaces may be employed, and each arranged as first described, but opening into a short vertical flue, "and the heated current rising a short distance up this flue, "passes back towards the periphery of the kiln by a pair of "radial or diverging flues."

[Printed, 2½d.]

A.D. 1853, April 25.—N° 995.

BERNARD, JULIAN.—"Improvements in casting metals, and in "moulding or forming other materials," and among the other materials, "porcelain and earthenware of all kinds" are named; and in regard to them, these improvements consist in casting or moulding them in shapes exhausted "by any convenient exhausting apparatus."

[Printed, 4½d.]

A.D. 1853, April 26.—N° 1004.

POOLE, MOSES.—(*A communication from Jacob Petit*).—"Improvements in the manufacture of porcelain and like wares." These are, having raised surfaces upon such wares, and also painting the same, the combination being claimed.

[Printed, 2½d.]

A.D. 1853, May 16.—N° 1208.

RICHARDSON, THOMAS.—"Improvements in the manufacture "of certain compounds containing phosphoric acid." These are decomposing mineral phosphates by fusing them with salts of potash or soda, and the phosphate "may be employed as a manure, "or in the manufacture of glass and porcelain."

[Printed, 8½d.]

P.

A.D. 1853, July 14.—N° 1669.

NEEDHAM, WILLIAM, and KITE, JAMES, the younger.—“Improvements in machinery and apparatus for expressing liquid or moisture from substances. No mention is made of the use of these improvements to this manufacture, but in a subsequent Patent, N° 1288, 1856, it refers to this invention, and says, the object of N° 1288 is to “further carry out or perfect the principle “of solidifying semifluids,” contained in N° 1669, and is used for passing “the water from clay used in the manufacture of “porcelain.” The improvements consist of a number of slabs of “a suitable material or combination of materials,” in which rectangular grooves or channels are cut, “the transverse section “of which will vary according to the nature of the material “used singly or in combination.” The lower grooves carry off the moisture, while the upper “give a means of getting rid of the “atmospheric air contained between the slabs when pressure is “effected.” The slabs are placed one above the other, with cloths between them, and supported on blocks, &c., forming chambers or cells. The ends of the cloths in each chamber are connected by a pipe with a force pump which is connected with a tank or vessel containing the substance to be operated upon. The substance is forced into the chambers or cells, and the liquid passes through the cloths.

[Printed, 8½d.]

A.D. 1853, July 14.—N° 1670.

BROWN, Honourable Sir RICHARD.—(*Provisional protection only.*)—“Improvements in coffins, catacombs, sarcophaguses, and “cenotaphs.” These are making the above “of glass, china, “earthenware, porcelain, terra cotta, or other similar material, as “also of prepared peat or sand in combination with clay, or peat “and mortar or other adhesive substances of any kind,” and in such a way that gases evolved “shall pass through chambers filled “with absorbing and disinfecting agents.”

[Printed, 2½d.]

A.D. 1853, July 15.—N° 1683.

D'HUART, HENRI JOSEPH.—“Certain improvements in the “manufacture of pottery.” These are applying “callipers or “sweeps in the manufacture of any kind of article in ceramic “*clay, such callipers or sweeps*” “being fixed, or having a rota-

"tory motion," and applying "these sweeps with an up and down and intermitting rotatory motion of the moulds, or with rotatory motion only." The callipers or sweeps "have the exact contour of the interior of the piece that has to be moulded."

[Printed, 7½d.]

A.D. 1853, July 25.—N° 1749.

FERGUSON, JOHN.—"Improvements in kilns for baking clay." These are, first, in "the general arrangement and construction." Second, "The application and use in kilns of open or permeable flooring with graduated apertures." Third, "The application and use in open kiln floors of bricks or tiles with graduated taper or inclined sides." Fourth, "The system or mode of effecting superior combustion, and preventing the formation of smoke, by the application and direction of the air" as described. The "chamber is oblong, and heated by furnaces at each end, and divided off from it by partitions," which "reach to near the top of the chamber. The furnaces are arched over, and the arches extend back so far as to leave a very narrow flue space between themselves and the partition." The flames, &c. pass up this, and finally pass through "a perforated false bottom to flues communicating with the chimney." The air is admitted to the flue through long passages between and on each side of the furnaces, and "at the narrow part of the flue passage between the furnaces and the chamber."

[Printed, 6½d.]

A.D. 1853, August 12.—N° 1893.

WAREHAM, HORATIO.—(*Provisional protection only*).—"Certain improvements in inlaying or ornamenting earthenware vessels." These are, first, by means "of moulds formed with embossed or raised patterns, instead of with depressed patterns or designs." Second, "filling up the patterns so imprinted, with a plastic material," and turning the vessel in a lathe to smooth the surface.

[Printed, 2½d.]

A.D. 1853, August 17.—N° 1926.

GRIMSLEY, THOMAS.—"Improvements in machinery for the manufacture of bricks, tiles, pipes, and pottery." These are,

first, a mill "for grinding or pugging clay, having fluted conical surfaces in combination with fluted conical rollers." Second, a chamber between the pugging mill and the brick machine, together with revolving scraper to collect the clay and force it into the mould boxes. The top and bottom of the mill are composed of two fluted conical surfaces, the top cone inverted, both revolve round a central shaft; between these, one or more fluted conical rollers, revolving round their own axes, are mounted; motion given to one of the surfaces or rollers will cause all the others to revolve; holes at top and bottom admit the clay in and out, by pressure from the conical rollers, into a box with "a revolving scraper or coutler, which presses the clay out of the bottom chamber into the moulds or through dies fixed at each end of the press." The upper surface is sometimes dispensed with. A cam or excentric motion causes the front of the mould first to recede and then rise up, when the piston further advances, and presses the article out on to a travelling bed, while a wire or cutter is brought between the article and back of the mould or piston, and "thus clears it from the mould."

See also Abridgments of Specifications upon Bricks and Tiles, page 113.

[Printed, 1s. 0½d.]

A.D. 1853, August 18.—N° 1937.

CORNELIUS, WILLIAM. — (*A communication.*) — "Improvements in gilding porcelain, glass, and such like materials." These are, first, the mode of preparing gold, and combining it "with a corrosive mixture" described.

Second, the mode or process of using it.

The gold dissolved in aqua regia is precipitated by ammonia, washed, kept in a moist state with oil, and mixed with the "corrosive mixture," which is "two parts of the finest rosin of Burgundy, and two parts varnish" used by printers, and the whole dried. This is mixed with "boracic bismuth," or "boracic silver," and either reduced by fatty oils or turpentine, and the article painted with it is then dried, and fired.

[Printed, 3½d.]

A.D. 1853, August 18.—N° 1938.

BERGEVIN, AUGUSTE MATHIEU MAURICE DE. — (*A communication from Guillaume Louis Edouard Buran.*) — "Improvements

" in the manufacture of coke, and in the apparatus connected " therewith, and in treating the products obtained therefrom." These improvements relate, first, " to the arrangement and construction of the ovens " for coking coal. Two ovens are built in juxtaposition, and each has two communications, one with the condenser and gas-holder, the other with the chimney, these shut or open when required. " Turf or other vegetable, ligneous, " or bituminous matters," are distilled in another form of oven. The gaseous products arising from such " mode of manufacturing " coke are collected into a gasometer and treated so as to render " them available for the purposes of illumination and heating ;" and in the provisional specification it is stated they may be used among other things for " the manufacture of glass in glass-works," and " the baking of china ware." Nothing is said about this application of the gaseous products in the full specification, nor is any mode given of such application in either of the specifications. Among other improvements, there is " an artificial " draft in the ovens," and this draft is connected " with a condenser and purifiers," also steam is admitted to the coals during carbonization, to divest the coke of sulphuretted hydrogen, besides the treatment of the products ; for which see Abridgments of the Specifications relating to the Production and Application of Gas, p. 281, et seq.

A.D. 1853, September 14.—N° 2139.

NASH, WILLIAM.—" An improved mode of manufacturing " china and earthenware articles on the lathe." This consists in constructing " a profile gauge or cutter of thin sheet steel, and " bending and setting it so that the figure of its cross section, as " well as that of its cutting edge, shall correspond to the profile " of the article to be manufactured." It is preferred to mount it in a slide rest, and bring it in contact with the upper part of the lump of clay while the same is rotating. The advance of the profile gauge may be " by hand, or otherwise, after the manner " of tools in slide-rest lathes."

Printed, 54d.]

A.D. 1853, September 16.—N° 2159.

THOMSON, ALEXANDER, and LOCKERBIE, DAVID.—" Improvements in kilns for baking and burning articles in earthen-

“ware.” These are, “The application and use in kilns of circumferential fires with the heated currents therefrom directed upwards through separate channels, in each case, between inner and outer walls, and thence downwards, converging towards the centre of the kiln,” also “conveying off the heated currents from the bottom of the kiln by passing the currents through a permeable floor (the apertures in which floor gradually diminish in size or extent as they approach the centre) into intermediate or lower labyrinthic passages, discharging the currents into the outer ends of radial bottom flues passing to the chimney;” likewise “the application and use in kilns of fuel-supplying doors for the furnaces, disposed along the top of the annular portion of the external wall.”

[Printed, 10½d.]

A.D. 1853, October 7.—N° 2292.

ELLIS, WILLIAM.—(*Provisional protection only.*)—“Improvements in the manufacture and in the ornamenting of china, porcelain, and pottery wares.” This consists “in the adaptation of the electrotype or analogous process to the depositing of metals or alloys of metals” on these wares. The oxides of the metals are mixed “with the ware previous to its being baked or fired,” or the wares are steeped “wholly or partially, according to the design of the ornament, in some metallic salt,” or they are coated “with plumbago or metal reduced to fine powder.”

[Printed, 2½d.]

A.D. 1853, October 11.—N° 2332.

CAMPBELL, WILLIAM MUIR.—“Improvements in earthenware kilns.” A circular kiln is described, having a single furnace under the bottom, fed “with fuel from the outside and communicating by its flue with a central vertical flue, from which latter a series of horizontal flues radiate outwards.” A modification of this is described as follows: “the main single furnace has two side elbow branch flues, besides “its direct radial flue, so that when advisable the central passage may be closed and the two side branches opened.” Again, a set of four furnaces may be employed, each as first described, but opening into a short vertical flue, and “the heated current rising a short distance up this flue passes back towards the periphery of the kiln by a pair of radial or diverging flues.” “As each furnace

"has its own short vertical flue at its inner end, the entire set forms a species of central ring, and the individual flues of this ring are again connected together by a set of short radial flues which proceed to a vertical central flue opening up through the body of the furnace." Besides the general arrangements described, the mode "wherein one furnace is made to act for two 'bag' flues" is claimed.

[Printed, 6½d.]

A.D. 1853, October 13.—N° 2353.

CAMPBELL, WILLIAM MUIR.—"Improvements in potters' or earthenware kilns." A circular kiln is described with four or more furnaces equidistant from each other, and supplied from the outside, and they are below the level of the kiln floor. "In each case the heated current passes from the furnace, which is itself in the wall, through the external kiln wall, and then enters an exterior concentric flue, running round the interior of the wall;" "it diverges right and left and traverses this flue, finally turning from it into a radiating flue at each end of such traverse, conducting the current along beneath the kiln floor to the central chimney." Other intermediate flues run in a similar manner. By this means "each radial current rises directly up from the top of the radial flue through the floor and ascends through the layers of articles to an overhead central opening, passing to the cone or chimney," on the top of which is a valve to adjust the draught. Each furnace has an arrangement for regulating the admission of air. Besides the general arrangement, the mode "wherein the heated currents pass from the furnaces right and left into an annular or segmental and concentric flue, and thence into vertical flues or 'bags' in combination with direct currents through radial flues to or towards the kiln's centre," is claimed; likewise, the mode "wherein the heat from each individual furnace is passed direct into an annular or segmental and concentric flue in combination with radial currents passing towards the kiln's centre," is claimed.

[Printed, 6½d.]

A.D. 1853, November 1.—N° 2532.

BALE, THOMAS SANDERS and LUCAS, DANIEL.—"Improvements in ornamenting the materials of and articles manu-



"factured in pottery, as bricks, tiles, slabs, &c.; and also in "glass, slate, stone, and other plastic substances." These are, producing ornamental effects upon the surfaces of materials," such as the above, "in which the entire pattern to be produced is "printed in stencil and transferred to the article to be ornamented." The "composition or stencil used" is composed of rose pink, whiting, fine ground flint, lamp black, sugar of lead, and resin, all in certain proportions, and "well mixed with printer's "oil." The "article to be ornamented is sized with a mixture of "Canada balsam and turpentine;" the impression is transferred on to it "in the ordinary manner of potters' transferring; after "remaining a short time it is washed with soft soap and potash "to bring away the superfluous paper and size, in order to receive "the ground. It is then oiled with Canada balsam and linseed "oil, but without the usual bossing, after which the ground "color is brushed, dusted, or laid on," and "fired with the "stencil on, which is loosened by the heat, and on coming out of "the kiln the stencil is rubbed off with fine sand and water, "leaving the color and pattern."

The "reverse of the above" may be followed. "When gilding "is required, ground gold is dusted on, instead of color." For some articles "some deviations will be necessary," and modifications of the above process are given, and the modes of decorating these articles and articles in ceramic, vitreous, and plastic manufactures," for floors, &c., are claimed.

[Printed, 34d.]

A.D. 1853, November 4.—N° 2566.

PRATT, HENRY.—"Improvements in kneading dough, and "which said improvements are also applicable to the kneading or "beating of clay, loam, or other plastic materials." These consist in an arrangement of beaters (which may be hollow for receiving hot water or hot irons, or they may be heated by steam), "lifted up by the action of projecting pins fixed on the periphery "of a barrel or roller" "working in journeys secured to "the sides of the machine in which are the beaters. The barrel has "a double row of projecting pins corresponding to "the number of beaters," so fixed that as it is made to revolve "by any power," the pins will lift the front ends of the beaters "by pressing down the back ends directly behind their axis."

To enable the materials to be laid on the bed for kneading, an arrangement is made by which the beaters are lifted up and retained any time which may be necessary. Besides the arrangement of the beaters "the various modes of applying heat " to such beaters " is claimed.

[Printed, 5½d.]

A.D. 1853, November 19.—N° 2696.

DANIELL, HENRY.—(*Provisional protection only*).—"Certain " improvements in drying clay," "to be used or employed in the " manufacture of percelain and other similar earthenware." Air is heated in a chamber by a fire below it, and it is "expelled " therefrom by means of a rapidly revolving fan" in the chamber, and passes over pans, in which are the moist clay, and afterwards into the open air. "An air pump may also, if preferred," be used "in lieu of the rotary fans."

[Printed, 2½d.]

A.D. 1853, December 27.—N° 3000.

PRIDEAUX, THOMAS SYMES.—"Improvements in apparatus " for regulating the supply of air to furnaces, and for preventing " radiation of heat from fire doors and other parts of the fronts " of furnaces." No mention is particularly made of applying these improvements to apparatus used under this head, but they are referred to in specification N° 2762, 1857, as partly applicable to kilns used in the manufacture of pottery. They consist in applying to the fire-doors of furnaces moveable valves or shutters, " by means of water or other fluid being caused to pass through " a small opening, and yet arranged to allow the piston or other " instrument to be moved freely, when pressed, in the opposite " direction." "The interior of the door (or other portion of the " furnace selected for the application of the valve) has fixed to it " a series of parallel inclined plates, inclining in one direction, " and a second series of inclined parallel plates inclining in the " other direction (so as to prevent the direct radiation of heat " from the fire outwards), and then a third series of plates, which " need not incline, with air spaces between each series." "In " closing the fire-door after supplying fuel to the fire, the shutters " or valves are opened, and the air passes freely between the " highly heated plates." "And the front of the furnace and

“ash-pit may be advantageously provided with a similar heat isolating apparatus, viz., a series of parallel inclined plates, those of the ash-pit being made moveable, so as to admit of the apertures being closed at pleasure.”

[Printed, 8½d.]

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## 1854.

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A.D. 1854, January 18.—Nº 121.

SHARPE, EDMUND.—“Improvements in the apparatus used for sifting clay.” Hitherto it is stated that much injury has been done to sieves by stopping the apparatus, and from time to time turning the sieves over to “empty away the matters which have not passed through” them. Now these improvements are to obviate this, and consist in only partially surrounding the sieves, which are suspended obliquely “in a frame which only surrounds three sides of the sieves, the lower ends of the sieves being open; so that the matters which do not pass through the sieves may pass away at that end.” The clay mixed with water is delivered by a shoot on to the upper part of the sieve. The sieve frames are made to vibrate by means “of a crank or other convenient motion.”

[Printed, 8d.]

A.D. 1854, January 19.—Nº 130.

WEBB, THOMAS.—“Improved apparatus applicable to the annealing of glass, and the firing of pottery ware.” These are the use of an annular travelling table, or its equivalent, for submitting the articles to be operated upon to the heat of the annealing chamber, and ultimately bringing them opposite the discharging apertures. “The table is enclosed in an annular chamber, and is supported on bearings similar to a turn table. The chamber is divided by a cross wall at the part where the fire-place is situated, for the purpose of directing the course of the flame and heated gases in one direction only round the chamber.” An opening is made in the wall in advance of the fire, for the purpose of placing the things to be annealed on

the table, and several holes are made in the rear. When the gases of combustion have made half a circuit of the chamber they enter a lateral flue, and thus pass off to the chimney. "The other half of the chamber is heated merely by radiation." Two circular chambers having each tables are described and claimed. The tables are provided on their under side "with circular racks, and are driven by means of a pinion, which gears into the rack, and is actuated by a winch handle."

[Printed, 10d.]

A.D. 1854, January 21.—N° 152.

VENABLES, THOMAS BOULTON.—(*Provisional protection only.*)—"Certain improvements in the manufacture of earthenware." This consists "in dispensing with the necessity for using flint and Cornwall stone in the manufacture of white earthenware body" by "the use and employment of certain materials." "No. 1, white body," consists of china clay slip, Staffordshire granite slip, black ball clay slip, blue ball clay slip, Paris white slip, and slop stain, in certain proportions. "No. 2, white body," consists of china clay slip, Staffordshire granite slip, black ball clay slip, Paris white, and slop stain, in certain proportions.

[Printed, 3d.]

A.D. 1854, February 18.—N° 394.

BRITTEN, BASHLEY.—"Improvements in crushing, pulverizing, and washing mineral earths or ores, and amalgamating the gold and silver contained therein, which said improvements are also applicable to crushing and pulverizing other substances." As regards this subject, the improvements consist of the application "of a crusher or pestil, working in a circular pan or basin, having a sunken circular space at the bottom, with a raised centre."

[Printed, 7d.]

A.D. 1854, May 11.—N° 1052.

DOULTON, HENRY.—"Improvements in kilns used in the manufacture of stoneware, earthenware, and china." These are for the purpose of preventing, "as much as may be, the evolution of smoke into the atmosphere," and "for this purpose over each fire-place or furnace a fire tile or thick plate, per-

"forated with numerous holes, is placed or fixed, and over this  
 "a chamber is formed to receive air, there being a slide or other  
 "means of regulating the flow of air into the chamber."

[Printed, 1s. 3d.]

A.D. 1854, May 24.—1161.

JENNINGS, JOSIAH GEORGE, and DAVENPORT, ROBERT.  
 —"Improvements in the construction of kilns for burning  
 "pottery and other ware." These are for the prevention of  
 smoke, and consist of a chamber in the centre of the kiln, from  
 which passages run into the open air; also passages run from the  
 chamber to the back of the fire-places or furnaces, where they  
 enter hollow perforated chambers. These chambers "are fixed  
 "beyond the back ends of the fire-bars, with passages around  
 "the sides of the chambers, for the passage of the products  
 "of combustion into the kiln." "There are other air passages  
 "built in the kiln communicating with the open atmosphere."

[Printed, 1s. 3d.]

A.D. 1854, June 15.—N° 1300.

KITE, JAMES (Secundus).—"Improvements in machinery and  
 "apparatus for expressing moisture from substances," "as slip  
 "for clay used in the manufacturing of pottery or porcelain."  
 "These are using one or more cylindrical or similarly shaped  
 "vessels provided with pressing or straining apparatus." "The  
 "substance to be operated upon is forced into a vessel at one end  
 "by a pump; the liquid finds vent through a strainer, while a  
 "revolving screw shaft of knives gradually forces the more solid  
 "particles of the substance to the other end of the vessel through  
 "the valve, die, or mould." Instead of the screw a plunger is  
 sometimes used.

[Printed, 10d.]

A.D. 1854, June 22.—N° 1369.

BLASHFIELD, JOHN MARRIOTT.—"Improvements in the  
 "manufacture of china, pottery, bricks, and other articles manu-  
 "factured for the most part of clay." These are "the use of  
 "minerals or fossils containing phosphate of lime, and known in  
 "commerce as coprolites, phosphorites, fossil sponges, fossil fœces,  
 "*fossil flesh, and fossil bones.*"

[Printed, 4d.]

A.D. 1854, July 5.—N° 1478.

**VENABLES, JOHN, and MANN, ARTHUR.**—*Provisional protection only.*—"Printing self and other colors in bas-relief or "raised work on china, earthenware, glass, parian, stoneware, "bricks, blocks, tiles, quarries, hardware, japan, and papier maché "ware." Plates of wood, stone, metal, &c., are engraved "much "deeper and broader than hitherto;" the self or other colors are rubbed into them, or a soft paper or cloth laid over them and pressed; the colors are deposited on the fabric, which is then gently rubbed upon the ware.

[Printed, 3d.]

A.D. 1854, July 15.—N° 1554.

**BRINDLEY, ELIJAH HENRY.**—"Certain improvements in "printing or ornamenting china, earthenware, and glass." These are, using "flexible and elastic blocks or types," such "blocks or "types being capable of being adapted to the particular form of "the surface to be printed." These blocks or types are of "flat, "convex, conical, spherical, or other suitable form," "adapted to "the shape of the article, the surface of which is intended to be "printed or ornamented."

[Printed, 7d.]

A.D. 1854, August 26.—N° 1570.

**WALL, GEORGE.**—"Improvements in machinery or apparatus "for the manufacture of pottery." These are using "a concentric mould made in separate parts, for the purpose of "applying the pressure to each part separately, and afterwards if "necessary to the whole of them together." The concentric mould consists of a fixed head and concentric rings attached by screws. A counter mould, with a bat of clay, is moved by a spindle upwards into the first mould, but first coming in contact with a sheet of caoutchouc, which it stretches into the mould. The use also of this sheet of caoutchouc is claimed.

[Printed, 10d.]

A.D. 1854, August 29.—N° 1892.

**SEITHEN, JOHN.**—"Improvements in the manufacture of cases "or envelopes for covering bottles." These are in the combination of mechanism for making these cases. Equal lengths of

rush, straw, &c. are confined at one end within a ring or cap, and placed over the neck end of a mould or mandril, of the form of the article for which the cover is required. "The mould is fixed to a frame, and its lower part is surrounded by a ring, which is capable of being raised and lowered by the operator. The cap being placed on the mould, and retained by any suitable contrivance, the lengths of rush or straw surrounding the mould or form are then tied tightly near the middle of their length, below a moveable elastic ring on the mould. The ring surrounding the lower part of the mould is then raised by depressing a treadle, by which the lower ends of the rushes or straws will be turned up over the cord, and around the mould or form, where they are again tied tightly around it near the upper part; the cap may then be removed, and the upper ends may, if necessary, be tied near their extremities. The case or cover may then be removed from the mould or form, the elastic ring in being drawn off contracting within a groove on the mould or form, so as to release it from the case or cover; or in place of forming the cases or envelopes separately, the bottle to be covered may be substituted for the mould or form, and the rush or straw permanently secured thereto."

[Printed, 7d.]

A.D. 1854, September 4.—N° 1933.

MAYER, SAMUEL, and BUSH, WILLIAM.—(*Provisional protection only.*) — "Improvements in reducing flint and other substances, rendering them suitable for the manufacture of porcelain and other earthenware articles." These are, first passing them through fluted rollers, afterwards through "millstones with cavities cut therein," and having a stream of water, which carries off the ground materials.

[Printed, 3d.]

A.D. 1854, October 25.—N° 2268.

RICKHUSS, JOHN, and TOFT, CHARLES.—"Improvements in the manufacture of parian, porcelain, china, and earthenware." These are "turning grooves, indentations, or incisures therein, and filling such grooves or incisures with coloured slip, and turning or otherwise reducing such articles to a smooth surface," "thereby saving the expense of painting or printing."

[Printed, 1d.]

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1855.

A.D. 1855, January 3.—N° 22.

VENABLES, JOHN, and MANN, ARTHUR.—“Improvements  
“ in producing raised figures or ornaments upon the surfaces of  
“ articles made of metal, pottery, and earthenware, glass, papier  
“ maché, and other materials.” These are the mode or modes of  
producing raised figures, &c., and placing or fixing the same.  
Raised figures or ornaments are “printed, deposited, or produced  
“ by means of plates, or pieces of metal, wood, stone, or other  
“ material, having their faces engraved or countersunk by any  
“ means. They are cut deeper than ordinary engraving, so as to  
“ contain the amount or quantity of material necessary.” “The  
“ countersunk parts, with the paste, composition, or other  
“ material (whether colored or not), of which the figures or orna-  
“ ments are to be formed,” are pressed against the surface of some  
material such as paper or cloth, which receives the raised surface  
upon it. The paste or composition may be made of vegetable oil,  
sulphur, red lead, and resin, boiled together, and mixed with the  
earthy matters. The device on the paper is attached to the  
articles to be ornamented by pressure.

[Printed, &amp;c.]

A.D. 1855, January 3.—N° 23.

VENABLES, JOHN, and MANN, ARTHUR.—“Improvements  
“ in producing figures or ornaments in articles of clay or plastic  
“ material.” These are “the mode or modes of placing or insert-  
“ ing figures or devices upon or within the surfaces of articles  
“ made of plastic materials, for the purpose of ornamenting  
“ the same.” The figures or devices are produced and applied  
as described in N° 22 above, sometimes to the green article, some-  
times to articles, the surfaces or parts of which only are plastic.  
“If the articles are to be formed within and upon a mould, the  
“ pieces of paper, &c., with the intended figures thereon, are  
“ placed upon or against the face or faces of the mould at those  
“ parts where it is intended that the figures or devices shall be  
“ applied, so that those figures or devices are pressed into the  
“ substance of the clay.” The devices may be applied to sheets



or bats of clay, and pressed into them as above described. They may "also be applied to the ornamenting of articles made of powdered clay, pressed into a mould by means of a powerful press."

[Printed, 5*d*.]

A.D. 1855, January 13.—N° 97.

HOLLINS, MICHAEL DAINTRY.—(*Provisional protection only*).—"Improvements in slip kilns for drying clay." These are constructing them "in such a manner that the flues from the fire-place, having arrived at or near the other end of the pan, shall pass back again under the pan, and have another fire-place near the chimney, which is erected at the end of the pan where the first-mentioned fire-place is situated."

[Printed, 3*d*.]

A.D. 1855, January 27.—N° 208.

MAYER, SAMUEL, and BUSH, WILLIAM.—"Improvements in reducing flint and other substances, rendering them suitable for the manufacture of porcelain and other earthenware articles." These are the combined apparatus. A pair of flute or corrugated rollers are suspended above a pair of plain rollers, under which is a hopper which receives the reduced product, which is then passed on to a pair of grindstones to be reduced finer, and thence meeting with a current of water to another pair of grindstones, in order that it may be by these means mixed with water, finally reduced, and passed into a receiver."

[Printed, 9*d*.]

A.D. 1855, April 3.—N° 750.

EVRARD, MAXIMILIEN.—"An improved continuous drawing compressor for moulding or bruising several substances or mixtures," and for "moulding bricks, plastic, ceramic, and other materials," &c. This consists "of a plunger made to work to and fro" "in a cylinder, in the upper part of which is an aperture through which the articles are fed. The mouth of the cylinder opens into a tubular or other shaped mould, into which the materials are forced. A weighted cover may be used for the mould, which being made to press more or less upon the materials passing through it, increases the resistance to

" their passage, and they will be consequently more closely compressed. At every stroke the plunger is drawn clear of the feed aperture, while at every forward stroke it drives a fresh supply into the moulds."

[Printed, 7*d*.]

A.D. 1855. May 11.—N° 1064.

PASCALL, JOSEPH, and FRY, GEORGE.—"Improvements in blanching, forcing, and propagating garden pots." These are, first, constructing pots for the above purposes in two separate parts, the bottom part "being formed with a groove or channel in or around its upper part, into which is fitted the edge of the upper part." Second, forming them with a groove or channel on the top edge for the reception of an opaque cover, "or a glass cover or shade." Third, forming the "ordinary hole in the bottom of garden pots only partially through the bottom, and causing apertures or channels to radiate therefrom to the outside of the pots."

[Printed, 7*d*.]

A.D. 1855, May 28.—N° 1221.

GRAFTON, HENRY.—"Improvements in apparatus for heating and cooking." These are applying "earthenware in moulded forms as chambers in which to generate and enclose the heat for cooking, either by inserting the articles to be cooked therein, or by placing vessels containing edibles in such moulded chambers." They may be formed like a common earthen pot or pipe with an inner projecting rib round the bottom with a hollow channel for gas. They may "be made in parts, the one to fit on the other, to make up the required height, or they may have vertical divisions where the parts separate. An outer casing as well as an inner chamber are formed of earthenware."

[Printed, 7*d*.]

A.D. 1855, June 12.—N° 1338.

HACKNEY, NATHAN.—"An improvement in the manufacture of earthenware, china, and porcelain." This is the application of native borate of lime in the manufacture of glaze for the above articles. The borate is mixed in certain proportions with Cornwall stone, bicarbonate of soda, flint, whiting, soda crystals; these are calcined together, and white lead, and cobalt or stain added.

[Printed, 3*d*.]

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A.D. 1855, June 20.—N° 1408.

**GERNON, JAMES.**—(*A communication.*)—(*Provisional protection only.*)—"Improvements in the manufacture of articles of clay." "In place of burning, the article is inserted into a still with coal tar, and the coal tar is distilled to obtain products therefrom in the usual manner." "Sometimes the pitch is run out into a vessel containing potter's clay, burnt and ground, mixed with manganese and sand," and forms a sort of asphalte.

[Printed, 3d.]

A.D. 1855, June 23.—N° 1445.

**SILBERMANN, IGNACE JOSEPH.**—"A new system of manufacturing globes and other printed, plain, or curve surfaces." This consists, first, in "using curve or plain moulds, and of such substances as can be etched, engraved, or embossed." Second, "in working the engraved surface with common printers' ink for obtaining a plain print, or with indelible inks, proof against heat, where the printed surfaces are to be baked or moulded in the heated state." Third, "in moulding or casting the matters to be printed on the engraved surfaces."

[Printed, 3d.]

A.D. 1855, June 27.—N° 1470.

**MARGUERITTE, LOUIS JOSEPH FRÉDÉRIC.**—"Improvements in the manufacture of glass and crystal." These are "calcining the chlorides of sodium and potassium with a silicate, the elements of which are capable of forming a volatile chloride, and by using any sort of clay;" also "applying it to fine and common crockery, draining pipes, &c." As an example, bisilicate of lead or zinc are calcined with the chloride; the chloride of lead or zinc volatilizes and is condensed, while a glass remains of bisilicate of potash or soda. This is afterwards mixed with other things to form the ware. The volatile chloride is treated hot or cold with lime or the carbonate of lime, and the oxide or carbonate of the metallic base fused with silica, gives the bisilicate to use again.

[Printed, 4d.]

A.D. 1855, July 2.—N° 1494.

**TOOTH, WILLIAM HENRY.**—"Certain improvements in the machinery for and in the manufacture of earthenware and

“plastic articles, and in the preparation of clays and other materials.” These are “making a series of holes with a core in one piece of various shapes in conjunction with a conical die,” and “flat knives so placed as to produce the effects of a screw, by setting them in horizontal rows and parallel to each other on the pug mill or other shaft, so as to dispense with the plunger or piston” described in N° 12,465, 1849; also making sewer blocks with rabbits, grooves, and projections,” and “tiles in the shape of common corrugated iron, and with a number of ribs on the under side.” Instead of using the piston in cylinder described in N° 12,465, applying “a pump to exhaust the air from under the sieve; also making two chimney-piece jambs in one piece by forcing through a die or dod plate,” and placing “an iron shoe to prevent them being chipped by the fenders.” Kilns are “built in the shape of a ring.” The making of stove backs to reflect the heat in conjunction with a vessel to hold the fire resembling a goblet or other desirable shape upon a foot in the hearth, or to be fastened to the back or sides of the stove facing;” also making the waterclosets described in N° 12,465, “by forcing the clay into moulds with pressure instead of moulding them by hand as therein set forth, with suitable rubbers to grind the same and make them air-tight.”

[Printed, 7d.]

A.D. 1855, July 6.—N° 1516.

BELLAY, JULIEN ARNOLD.—“Improvements in manufacturing articles of earthenware and china.” These are in the machinery for manufacturing, and consist “of two shafts, one placed immediately over the other. The lower shaft carries fast and loose pulleys, and can be raised to rotate by slipping a belt over the fast pulley or pressing down a treddle, which at the same time brings down the upper shaft. The lower and revolving shaft has fitted in or on the top a mould for shaping the inside of any circular or conical vessel, such as a basin, saucer, plate, &c. The bottom of the upper shaft which is only free to move up and down in a straight line, has fitted to it a mould, die, or templet for giving the exterior shape to the basin, saucer, or other circular or conical article to be produced.”

[Printed, 7d.]

A.D. 1855, July 13.—N° 1572.

COCHRAN, ROBERT.—“An improvement in the preparation of “clay for potters’ use.” This consists in boiling what is called the slip in an iron pan coated with zinc, by means of steam admitted into a jacket.

[Printed, 3d.]

A.D. 1855, July 31.—N° 1737.

DALMAN, GEORGE JAMES.—(*Provisional protection only.*)—“An “improvement in the manufacture of glazes for earthenware.” This consists in the “application of native borate of lime combined with carbonate of soda” in place of borax.

[Printed, 3d.]

A.D. 1855, September 4.—N° 2003.

GILBEE, WILLIAM ARMAND.—(*A communication from Monsieur Salmon.*)—“Improvements in the manufacture of glass.” This consists “in the employment of improved coke ovens instead “of the ordinary kilns for the manufacture of glass, porcelain “&c.” Four coke ovens are placed in such a manner that all the heat arising from them is made to ascend into a melting oven by means of flues, each oven is furnished with furnace doors, through which the furnace is fed with coal. The crucibles are placed in the oven over the flues; there are openings for the service of some crucibles, and chambers for preparing the coal, and arrangements for obtaining gas for lighting and heating.

[Printed, 10d.]

A.D. 1855, October 1.—N° 2179.

ILLINGWORTH, WILLIAM.—“Certain improvements in “printing earthenware, china, or other ceramic manufactures.” These are said to consist “in the substitution or use of a preparation of saccharine matter in lieu or in place of oil, &c., (as “hitherto employed) in the pigment or conveying medium of “colour in printing earthenware,” &c. The saccharine matter, as sugar, honey, molasses, glycerine, &c., are “tempered by heat, “and by the addition of a little albumen or caseine, to give it “strength, so that the conveying will not run.” The proportions required are given.

[Printed, 3d.]

A.D. 1855, October 4.—N° 2217.

SANDERS, FREDERICK GEORGE, and SANDERS, THOMAS RICHARD, junr.—(*Provisional protection only.*)—"Improvements in the manufacture of pottery, earthenware, and other clay articles." These are, first, producing fire clay in a pulverized form, by drying, grinding, and firing. Second, casing with sheet iron the outside of kilns. Third, obtaining the necessary heat in kilns by means of a blast of air, by a fan or other means.

[Printed, 8d.]

A.D. 1855, October 23.—N° 2371.

RICHARDSON, THOMAS.—"Improvements in the manufacture of glass and clay wares." These are "the application of native borate of lime, alone or fritted with a salt of soda, in the preparation of glaze for clay wares," and "in the manufacture of glass." The borate of lime is purified before using, for it is stated that it was previously publicly used in its natural state in glazing certain wares, but owing to the impurities present the color of the ware was more or less injured." The purifying is by levigation or by brushing.

[Printed, 3d.]

A.D. 1855, November 28.—N° 2683.

BARBIER, CHARLES JEAN BAPTISTE.—"An improved kiln for burning or firing pottery, bricks, tiles, and other earthenware." It consists "of a continuous succession of laboratories in a horizontal line, in connexion both with each other and with a horizontal flue leaning against them, which also communicates with one or several vertical flues rising outside or inside of the apparatus. Above the whole is a dryer, which admits all the radiated heat through an open-work floor. All the flues serving for connecting either the laboratories with each other, or with the horizontal flue, or the latter with the vertical flue, are provided with valves or dampers. The draught is effected through a horizontal line. The fire-place, which may be fed with wood, peat, or coal, comes up successively to each laboratory, standing the necessary time for burning the products, then goes up to the next, and so on in a continuous way. For the purpose it is mounted on a double super-posed railway line; the upper rail

"allows the sheathing or unsheathing of it, whilst rotation is effected on the lower rail round the apparatus inside or outside."

[Printed, 2s. 11d.]

1856.

A.D. 1856, January 7.—N° 52.

JARVIS, CHARLES, and CLARE, THOMAS DEYKIN.—"A new or improved oven or kiln, to be used in the manufacture of coke and pottery, and for heating and drying generally." These are "ovens or kilns in which the heated air and flame from a furnace are made to circulate around a lining or cistern in which the coal to be coked, or the other matters or things to be heated or dried, are contained," also connecting a number of these together, "so that the heated air and flame from the first shall pass through the whole series."

[Printed, 6d.]

A.D. 1856, January 26.—N° 212.

GARDNER, EDWARD VINCENT.—"Improvements in heating, drying, dessicating, and evaporating." These are said to be applicable to a number of purposes, and among those named for "ovens for pottery and glass," and consist for these purposes of a chamber made of metal, in the lower part of which is placed a furnace; in this chamber shelves are fixed, so as to cause the flame or heat to flow from side to side of the chamber until it escapes at the top by a chimney. These shelves form separate chambers, and on them the goods are put; the chambers may be connected by exterior bent pipes, to form a continuous passage, or, instead of the bent pipes, rollers are placed, which carry an endless band or sheet of wire gauze, &c., with the substances to be dried.

[Printed, 9d.]

A.D. 1856, February 12.—N° 360.

JABLONOWSKI, J. FELIX PRUSS.—(*Provisional protection only.*)—"A new process of chromo-lithographic painting on glass, porcelain, clays, lava, and other materials susceptible of vitri-

“faction, and on all metals and metallic compounds capable of receiving an enamelled surface.” Four different stones or plates are “plastered with a stratum” of the following substances, mixed in certain proportions, namely, gum copal, gallipot or white resin, fatty oils, and turpentine, and dried, and the drawing executed upon them, and inked, and printed upon paper prepared first with a coating of a substance soluble in cold water, such as gum, and when dry with another coat of substances soluble in alcohol, such as the resins. The objects to be ornamented are “plastered with a coating” of gallipot and turpentine in certain proportions, and the papers with the drawings upon them are damped and pressed upon them, sponged with water, and removed, the drawing is thus transferred. “Printing oil” is made by putting fresh nuts with a few crusts of burnt bread into it, heating it, and igniting it, and extinguishing the flame by covering it from the atmosphere, “the process must be continued until the oil takes fire five or six times in succession.”

[Printed, 8d.]

A.D. 1856, February 20.—N° 438.

BARSHAM, JOHN.—“Improvements in the manufacture of cases or packings for bottles and jars.” These are said to consist in weaving rushes or other vegetable fibrous matters “into tubular covers or packings for bottles or jars.” Tufts or bundles of rushes, &c. “constitute the longitudinal strands or warp of the woven tube,” whilst “strings or yarn constitute the transverse yarns or strands of the weaving;” these pass “alternately under and over the bundles or strands of vegetable fibrous matters.” When the fabric has been produced, and the ends of the yarns or strings tied together to make the same into a tube, the upper end is bound or tied, and so the case is complete.

[Printed, 8d.]

A.D. 1856, March 4.—N° 550.

ROSENBERG, CHARLES THOMAS.—“Improvements in ornamenting china, glass, and other surfaces when transferring printed impressions.” These are the adaptation of a series of engraved plates, produced by the aquatinto process in combination with other styles of engraving, and producing impressions in colours from such plates, and transferring such impressions to



the surfaces of porcelain," &c. These impressions are first printed upon paper "prepared with a composition of starch, gelatine, and "loaf sugar" in certain proportions. The article to be ornamented may be coated first with a solution "of rosin dissolved in "turpentine," the paper with the drawings is moistened and pressed upon it, and on further moistening is removed.

[Printed, 4d.]

A.D. 1856, March 6.—N° 562.

POCHIN, HENRY DAVIS. — "Improvements in the manufacture of aluminous and siliceous compounds." These are "the treating of a mineral containing variable proportions of silica and alumina, with powdered charcoal, peat, pitch, pitch-coke, soot, sawdust, or other carbonaceous matter, leaving but little ash and no iron after combustion, in a reverberatory or other furnace, as above described, for the manufacture of aluminous and siliceous compounds in such manner, as that the alumina may be brought into a condition to be more easily acted on by sulphuric and other acids, and the silica of which can be obtained in an almost pure state, suitable for the ordinary purposes for which that mineral is employed."

[Printed, 3d.]

A.D. 1856, March 10.—N° 579.

HANNAH, ROBERT. — "Improvements in pottery kilns." These consist in forming the secondary opening ("usually in the top of the furnace in that part which forms a horizontal top of the step or bench, which opening is for feeding the fire by and for admitting air,") either "in the vertical side or face of the furnace above the doorway or glut," or "in an inclined or curved portion of the brow of the furnace or bench, so that the fuel can be introduced laterally, provided it is not directly above or over the fire."

[Printed, 10d.]

A.D. 1856, March 10.—N° 580.

CHABLIN, LÉON, and HENNIQUE, ANTOINE. — (*Provisional protection only.*) — "A new mode of ornamenting ceramic and "vitreous products." The design is painted on the article with

" a paste composed of chloride of silver mixed with spirits of " turpentine," heated in a furnace, and when cold, placed in an electro-plating solution of gold or silver, with a galvanic battery ; when sufficiently coated it is burnished.

[Printed, 3*d*.]

A.D. 1856, March 25.—N<sup>o</sup> 702.

BROMLEY, JOHN, and ADAMS, WILLIAM.—(*Provisional protection only*).—" Improvements in ovens used for firing porcelain, " and other kinds of earthenware." These consist in firing " the " bottom and centre of the oven by flues from one half the " mouths thereof, and the outer rings and top of the oven are " fired by flues from the other half of the mouths," allowing " no communication between the flues for firing the bottom and " centre, and those for firing the outer rings and top of the " oven."

[Printed, 3*d*.]

A.D. 1856, March 25.—N<sup>o</sup> 713.

ILLINGWORTH, WILLIAM.—(*Provisional protection only*).—" Certain improvements in printing or coloring china, earthen- " ware, or other ceramic manufactures, and in the machinery or " apparatus connected therewith, and also improvements in the " subsequent treatment of such manufactures." These are, first, in place of " oil or other matters now in use, preparing saccharine " matter in combination with certain animal or vegetable muc- " lagenous substances, as albumen, gelatine, gluten, casine, " carrageen moss, linseed, mucilage, dextrine," &c., to be used in printing or coloring pottery, &c. Second, applying " doctors in " connexion with the flat plates used for printing, for the purpose " of cleaning such plates," as in calico printing, " and also, if " preferred, in combination with the use of inking or colouring " rollers for furnishing the said plates." Third, " balancing or " equalizing the power of suction of the glaze," by " dipping or " immersing the newly-printed ware in a thin mucilagenous " solution, either pure, or mixed with acids." Fourth, glaze of the ordinary composition is improved " by the introduction or " admixture of mucilage."

[Printed, 3*d*.]

A.D. 1856, March 26.—N° 718.

TOLHAUSEN, ALEXANDRE.—(*A communication from Halvor Halvorson.*)—"An improved mode of manufacturing porous "earthenware." This consists in employing "a volatile salt or "substance," which, mixed with the clay volatilizes in the process of burning. "As a general rule," the volatile salt or substance is mixed with the clay in equal proportions. The volatile substance may be "oxide of mercury, arsenic acid, sulphur, resin, or "any similar volatile body."

[Printed, *sd.*]

A.D. 1856, March 31.—N° 770.

LOOKER, BENJAMIN, the younger.—"An improved mark or "indicator, to be let or fixed into the ground in burial grounds "and other places." The indicator is made "of clay or earthen- "ware, either solid or hollow, of any required size or form, the "lower part being made with orifices or hollow countersunk or "projecting parts," to hold it more securely in the ground.

[Printed, *sd.*]

A.D. 1856, May 9.—N° 1091.

LÉON, LOUIS JARDIN, and BLAMOND, JOSEPH.—"Certain "improvements in engraving on stone, earthenware, china, and "glass, as also in ornamenting the same." These are, first, "em- "ploying liquid hydrofluoric acid," for engraving these articles and other silicious materials. The articles are covered with varnish, the design drawn and the acid applied. Second, ornamenting the same by "filling up the interstices of the intaglio "design with white or colored glass or metals, for producing "enamel and ornamental damask work." "The glass is pul- "verized, and the interstices filled with it, and then fused, any "excess being removed."

[Printed, *sd.*]

A.D. 1856, May 24.—N° 1244.

ILLINGWORTH, WILLIAM.—"Certain improvements in print- "ing or coloring and glazing china, earthenware, or other ceramic "manufactures, and in the machinery or apparatus connected "therewith, and also in the subsequent treatment of such manu- "factures." These are, first, "the substitution or use of certain

“ animal and vegetable mucilagenous or amylacious substances, as albumen, gelatine, gluten, casine, carrageen moss, linseed, mucilage, dextrine, gum arabic, gum adragant or tragacanth, and all other animal and vegetable mucilagenous or amylacious substances; also the use of deliquescent salts and other substances, such as chlorides, nitrates, acitates, citrates, tartrates, sacharates, &c., &c. of zinc, manganese, lime, magnesia, &c.; also citric acid or lemon juice, sacharic acid, phosphoric acid, arsenic acid, muriatic acid, together with other deliquescent acids, and their different combinations, either with or without saccharine matter, in lieu or in place of oil, tar, &c., as hitherto employed in the pigment or conveying medium of metallic oxides or color used in printing earthenware, &c.” Second, applying doctors in connection with the flat plates used for printing, for the purpose of cleansing such plates “as in calico printing,” and also, if preferred, in combination with the use of inking or coloring rollers for furnishing the said plates. Third, removing the paper “which conveys the impression from the wares by the application of diluted chlorides or acids to the back of the paper, or by dipping the water in water mixed with a little mucilage, chloride, or acid.” Also dipping “the newly printed ware in water or water mixed with a little mucilage, chloride, or acid.” Fourth, glazes of the ordinary composition are improved “by the introduction and admixture of mucilage.”

[Printed, *4d.*]

A.D. 1856, May 31.—N<sup>o</sup> 1288.

NEEDHAM, WILLIAM, and KITE, JAMES (Secundus).—“Improvements in machinery or apparatus for expressing liquids or moisture from substances.” These are said to be improvements upon the apparatus described in N<sup>o</sup> 1669, 1853. Arrangements of grooved slabs, called floats or trays, between which “cloths or other filtering medium” are attached to pipes, through which the material to be acted upon is forced “by means of a force-pump (or any other adequate means)” are described. The various parts are not claimed, but the combination of parts is claimed.

[Printed, 10*d.*]

A.D. 1856, June 27.—N<sup>o</sup> 1515.

JOHNSON, JOHN HENRY.—(*A communication from E. P. T. T. Tassey de Montiluc and L. J. Gauthier.*)—“Improvements in the

“production of carbonate of barytes.” The product is “largely employed,” “particularly in the manufacture of glass crystal, enamel, pottery ware, &c.” “The peculiar process consists in decomposing an aqueous solution of the sulphuret of barium by the aid of carbonic acid gas, assisted by the presence of a certain quantity of potash, soda, or other alkali.” “If sulphate of soda be used, it will be entirely decomposed by carbonic acid, carbonate of soda and sulphuretted hydrogen being thereby formed,” and “if a solution of sulphuret of barium” were added, and carbonic acid passed into the warm solution “sulphuretted hydrogen will be produced and escape,” and “the carbonate of barytes is thereby produced.”

[Printed, 4d.]

A.D. 1856, June 28.—N<sup>o</sup> 1525.

MCADAM, WILLIAM.—(*Partly a communication.*)—“Implements in the manufacture of articles of clay and such like plastic substances.” These are instead of using what “are commonly called the potter’s wheel and potter’s moulds,” two moveable headstocks are supported by a horizontal bed of cast iron or other material, with a capability of being moved thereon the required distance by racks and wheels; one of the headstocks “has a revolving spindle, similar to a turning lathe, and is furnished with a cutter, suitable to cut out and press the clay as held in position.” “This cutter being withdrawn, a supporting frame is then drawn into position to carry a portion of clay to form the bottom or support to the article to be produced; the other moveable headstock carries a spindle, with a cutter capable of being set at right angles thereto.” “The two spindles work in opposite directions, the one on the outside, the other in the inside, completing the forming or luting of the bottle or other vessel in the bottom.” “A stationary frame, fixed on a horizontal bed, and closing in parts properly hinged, to admit of the bottle or other vessel being easily taken out, gives the external figure, and into which the proper quantity of clay is put when the operation is commenced.” This frame is changed according to the form or kind of vessel wanted,” and the cutters at the same time are arranged.

[Printed, 10d.]

A.D. 1856, June 28.—N° 1527.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(*A communication.*)—(*This Invention did not proceed to the Great Seal.*)—"Improvements in drying, burning, and cooling bricks, tiles, and other ceramic substances." These are in apparatus used, consisting of "two parallel tunnels or vaults, one of which is used as an oven, and the other as a drying chamber or vault." On the brick floor of these vaults is laid down a double line of rails, so sloped that waggons move "without other locomotive power;" the furnace is placed at and across the lower extremity. Over and round the said vaults is constructed another vault or channel, with rails laid down in the same manner." This receives the waste heat for baking the materials. The cars filled with the articles are raised to the drying channels by a lifting platform, and the channels are divided. "At the sides of the oven are a number of doors." "The two lower doors are connected at the ends, and a turn-table or moveable platform is used to make the cars pass from one vault to the other." Under the moveable platform is a pit, to receive any material that may fall." "The moveable platform may be passed out of the cooling channel through a large iron door." "Along the burning channel are a number of valves, which open into a flue underneath, communicating with the chimney."

[Printed, 8d.]

A.D. 1856, July 2.—N° 1553.

SPITTLE, WILLIAM FREDERICK.—"An improvement or improvements in braiding or plaiting machinery." These consist "in constructing or covering those portions of the spindles," or other parts of such machinery "against which the thread being braided or plated rubs, of glass, enamel, china, or other vitreous or semi-vitreous substance."

[Printed, 8d.]

A.D. 1856, July 2.—N° 1556.

NOURISSON, ALFRED.—(*Provisional protection only.*)—"Improvements in drying and burning bricks and other articles of clay." These consist "in a peculiar arrangement of kiln." The kiln consists of a furnace and a series of chambers, which

"are heated successively by the furnace;" their bottoms, formed in sections, are moveable from chamber to chamber. The articles are loaded on "a carriage, which moves through a drying stove," and when dry "the carriage is transferred to one of the moveable sections of the bottom in the first of the chambers heated by the furnace, and from thence it moves onwards until it arrives in a chamber formed like the body of a reverberatory furnace." Afterwards this section of the body may descend to a cooling chamber, the air from which heats the drying stove, or the cooling chamber may be placed beyond the furnace, which furnace is on a carriage, and can be moved out of the way; instead of one moveable furnace "two small furnaces, one on each side of the bed, may be employed." Instead of the fuel being burned "on a grate, the fuel is placed (with the articles to be dried or burned) on the moveable sections of the bottom, and it becomes ignited as the articles pass through the kiln." "The combustion is regulated by dampers."

[Printed, 3d.]

A.D. 1856, July 7.—N° 1589.

CHENOT, ALFRED LOUIS STANISLAS, and CHENOT, EUGÈNE CHARLES ADRIEN.—"Improvements in machinery for compressing metallic sponges and other substances." These improvements, it is stated amongst other things, are applicable "to the moulding of clays, &c." "Three sorts of these machines" are only described, it is said, "as sufficiently illustrative of the principle" of the invention; "but these may be varied or modified without deviating from the said principle." "A socket or metallic or other block, into which a hole or tube is cut out, either of prismatic, pyramidal, cylindrical, or conical form, metallic sponges (here given as an example) are thrown into the said hole, and compressed there, either by violent shocks or any suitable means." The hole or tube described is cone shaped, the material fed in at the top at each stroke of the punch coming down into the hole or tube. At every stroke of the punch "a portion of the compressed material will be forced out through the lower end." "At the lower part of the socket an obturator or closing apparatus may be contrived, for the purpose of not allowing the materials to escape until they are thoroughly incorporated with each other." A punch may be

made to pass upwards into the socket, and in this manner also the article is further compressed. The apparatus next described, it is said "is as it were a transitionary type between the one first described and that with two opposite punches or stamping implements. In this apparatus the resistance, instead of being opposed by the materials already stamped or compressed in the mould, is actually opposed by a plain of metal or any unyielding substance upon which the mould or moulds rest." Machines are made with two opposite punches, either of the two implements is the compressor, and the other drives the moulded materials out. An hydraulic press and other means of working such machines are described, but it is stated that "whatever may be the mode of compression, whether the motion is imparted by means of screws, racks, gear, cams, levers, by steam, water, or gas power, this is quite unimportant, and nowise prejudices the principle of the invention."

[Printed, 2s. 7d.]

A.D. 1856, July 12.—N° 1649.

PETRIE, WILLIAM.—"A new porous material for filters and other like articles, and for certain modifications or improvements in the manufacture of the material, whereby it is adapted to the formation of vessels of capacity, to be employed as a cement, as a water and acid-proof lining, as a preservative coating, and as a substitute for stone and earthenware." The porous material is made by mixing sulphur in a certain manner with sand. The mixture while hot may be moulded, "and cold water thrown over the moulded material while still in the mould, so as to sink through its pores;" holes or apertures are formed in the under side of the mould, to allow the water to percolate." Instead of applying cold water, another plan is to cast the substance with a 'tail' beneath, of the same material, into which the surplus sulphur may settle, and which can be cut off afterwards," and this mode of coating is claimed. "A compound sulphur" is sometimes used; this is made of a mixture in certain manner of clay and powdered sulphur. Instead of clay in some cases an impalpable powder of siliceous or hard carbonaceous matter is used, or these are mixed with the clay. These compositions, it is stated, are "improved for many purposes by the addition" of from one to ten per cent. "of



"resinous matter, as pitch, wax, gutta-percha, or shell-lac," mixed in a certain manner. In some cases the casting "should be made with a 'head,' in which any surplus sulphur will collect as the material cools," and this mode of casting is claimed. This manufacture is not confined to the use of siliceous or hard carbonaceous matters, other "sufficiently infusible and unchangeable material that may be convenient in each particular case, such as granite, porphyry, or other stones. Little care is needed in the selection of the stones when employed in forming concrete, and for hydraulic works."

[Printed, 4d.]

A.D. 1856, July 21.—N° 1715.

LEAK, ELIAS.—"A thimble pillar with points and branches, to be used in placing 'glost,' china, and earthenware in ovens and kilns when firing, burning, or baking such ware in lieu of the cockspsurs and stilts now in use for that purpose." This invention is said to be "the forming a pillar with the cuping pin, cuping, matching, and fitting in and on one another, or in any other way, so as to form a pillar for such purposes, by connecting together bosses furnished with branches or points, either by pegs and sockets, or by placing them on an upright rod or bearer," without being confined "to the particular form of such bosses, or to the number of arms or branches with which they may be provided." An upright is described, furnished with lateral projections, "on to which crank-formed pins" "for supporting the ware are hooked or hung," and "the cranked form of the pins," "or any modification thereof," is also claimed.

[Printed, 10d.]

A.D. 1856, August 4.—N° 1833.

GOTTGETREU, CHARLES GUSTAVUS.—(*Provisional protection only*).—"Lithographic printing in oil and varnish colors and metal, on glass, wood, papier mâché, marble, metal, porcelain, or any other material that offers a suitable surface." This is done first "on paper which has undergone a preparation with various gums" (but none are mentioned), pressing the paper on the material; afterwards removing the paper by pulling it off in a damp state.

[Printed, 3d.]

A.D. 1856, August 8.—N° 1866.

DAVENPORT, ROBERT.—(*Provisional protection only.*)—"Certain improvements in kilns for burning pottery, earthenware, china, porcelain, and similar substances, to enable them to consume their own smoke." These consist "in passing the smoke, mixed with atmospheric air, through a fire prepared for the purpose, and fed with suitable fuel, and perfectly distinct from but connected by a flue or flues with the fire, by which such smoke shall be generated, and to conduct the flame and vapour from such first-mentioned consuming fire by means of a flue or flues into the body of the kiln, or wherever else it may be desired."

[Printed, 3d.]

A.D. 1856, August 13.—N° 1894.

LESSER, DAVID.—"Certain improvements in machinery or apparatus for making lozenges, or other similar articles," and it is said that it is "equally applicable for rolling, cutting, and stamping, clay," &c. These are, first, "the method of discharging the articles from the moulds, by means of internal plungers" in combination with the intermittent revolving or partly revolving motion imparted to the bed." Second, "the general construction, arrangement, and combination of the apparatus." The apparatus consists of an upper and lower series of rollers, through which the materials are delivered to the dies, with arrangements for dusting the materials in passing along. The lower dies are upon a rod bar or bed at one extremity of the table, and the material to be stamped is propelled by a roller over the bed containing the lower dies; the upper punches or dies now descend, cut out the shape of the article, and press it into the lower die, thus impressing a design upon the upper and lower surfaces. These "punches or plungers then rise from the lower dies, leaving the article in them, after which the bed either vibrates or turns half round upon its axis, and a series of plungers, suitably contained within the dies, force out the articles from their moulds, and deliver them on a traversing cloth for subsequent drying. Should the articles not leave the moulds readily, a thin blade may be placed at the limit of the motion of the bed (when this method is employed), against the edge of which the articles are forced, and thus raised from their dies or moulds."

[Printed, 10d.]

A.D. 1856, August 28.—N° 2004.

GARDISSAL, CHARLES DURAND.—(*A communication.*)—"A new manufacture of artificial fuel." This is composed of "clay, coal dust, and a nitrate, or of nitric acid," mixed in given proportions, and in a certain manner, with a solution of alum. "When the mixture has become homogeneous it may be moulded into bricks" or "tiles, drain pipes, or other ceramic or earthenware manufacture." "The moulded product is dried in a stove, or on drying frames in the open air, according to the season." In burning, they are placed in the ovens or kilns in the position, where fires are required in the mass, to be baked or burned. The result is a porous brick or article. "This improved combustible," it is said, "can be used for various heating purposes, such as for heating baker's ovens, baths for dyeing, the manufacture of chemical productions of lime, &c., one of its advantages being that it burns as slowly as may be wished."

[Printed, 8d.]

A.D. 1856, November 3.—N° 2576.

TEARNE, SAMUEL, and RICHMOND, GEORGE WILLIAM.—"Certain improvements in producing ornamental designs on the surfaces of fancy and other goods made of papier mache, wood, glass, china, earthenware, tin, iron, or other such like materials, the surfaces of which, when made up, are usually finished by staining, varnishing, painting, or japanning." These are, first, "colouring, graining, or marbling the said surface with a distemper or water colour, and transferring thereto a design printed in an oily material, so as to protect part of the surface while the graining or marbling is washed from the remainder, the process being repeated as often as may be necessary to produce the various kinds of design required." Second, "colouring, graining, or marbling the said surface with an oil colour, and transferring thereto a design printed in distemper or water colour, so as to protect part of the surface while the graining or marbling is removed from the remainder by a suitable solvent, the process being repeated as often as may be necessary to produce the various kinds of design required." Third, "ornamenting pearl, and such other surfaces as may be acted upon by acids, that is to say, transferring to the said surfaces a design, printed in some material not acted upon by the

“ acid employed, for the purpose of defending a portion of the surface from the action of the acid.” Fourth, “ ornamenting glass by transferring thereto a printed design, so as to defend portions of the surface while the stain or ground colour is poured or floated upon the said surface, and afterwards drying the stain or ground colour and burning, the stop being previously removed or burnt off by the heat applied.” Fifth, “ ornamenting glass and other surfaces by transferring thereto designs printed in colours,” reversing the order in which the colours are ordinarily printed upon the transfer paper; the colour ordinarily printed first is printed last; the colour print is transferred to the article “ by the ordinary process of transferring.”

[Printed, &c.]

A.D. 1856, November 3.—N° 2583.

KIRKHAM, JOHN.—(*Provisional protection only.*)—“ Improve-  
ments in the construction of furnaces, ovens, or kilns for  
drying, baking, or burning pottery, earthenware, bricks, tiles,  
or other similar articles, and in the means of collecting and con-  
densing the smoke, gases, or vapors evolved from the fuel, in  
such or other furnaces or fire-places, or that escapes from the  
retorts and other parts of the apparatus used in the manu-  
facture of gas.” These consist, first, in constructing the furnace  
or oven built of bricks, with “ the crown or top arched over or  
otherwise made close and air-tight,” and having one, two, or  
more fire-places “ in the bottom part of the oven, and air is  
admitted over the top of the fuel from the sides or ends of the  
furnaces.” “ The flame and heat circulates through the oven,  
and is then drawn down and through descending and horizontal  
flues constructed in the bottom of the oven, and from thence is  
carried through a second, third, or more ovens, whereby the spare  
heat may be beneficially employed in drying and preparing the  
articles or wares to be next burnt.” The vapors or gases are  
next drawn “ by fans or some such machinery,” through close con-  
densing vessels, in which are pebble stones or some such materials  
moistured by jets of water, and by this means are condensed.  
Second, applying the above method of condensing gases “ to any  
furnace whatsoever.”

[Printed, &c.]

A.D. 1856, December 4.—N° 2882.

**BELLFORD, AUGUSTE EDOUARD LORADOUX.**—(*A communication.*)—"Improvements in drying, burning, and cooling bricks, tiles, and other ceramic substances." These consist in an oven "composed of two parallel channels or vaults, one for burning and the other for cooling the materials. The furnace is placed at the extremity of the burning channel." "Over and round these channels is constructed a drying chamber, which is divided into six compartments, and used for drying the plastic materials. Between the top of the cooling channel and the floor of the drying chamber is left a small space enclosed between two ranges of cast-iron plates, through which the waste heat arising from the cooling channel circulates, & by means of registers passes into one or several compartments of the drying chamber, the heat in the said compartments being regulated by keeping the registers open or closed. On the brick floors of the burning and cooling channels and of the drying chamber is laid a line of rails, and the floors have a slope of such inclination as to allow the waggons used for transporting the bricks or other ceramic substances to be easily pushed forwards. The slope of the burning channel is above the furnace, that of the cooling channel below it. At the extremity of the burning channel, or at any spot judged convenient, is erected the chimney or shaft, & the smoke passes up it by means of subterranean passages leading from the furnace to the said chimney. Each of the channels is closed by two doors about 3 feet apart from each other, & forming an antechamber. At the end of the burning channel, facing & close to the furnace, is a turnplate fitted on to a transverse platform, on which the waggons containing the materials to be burnt may be made to rotate in such a manner as to expose equally the different sides of the mass of materials to the heat of the furnace."

[Printed, 10d.]

A.D. 1856, December 4.—N° 2883.

**MARGUERITTE, LOUIS JOSEPH FRÉDÉRIC.**—(*Provisional protection only.*)—"Improvements in treating or preparing materials to be used in manufacturing retorts, crucibles, bricks, and other kinds of earthenware." These are encresing in all kinds of clay the proportions of silica and alumina, in order to render the

articles less fusible. This is effected by first drying the articles, then soaking them in "chloride of aluminum, or chloride of "silicium," or "in acetate and sulphate of alumina," and firing till the acids are driven off.

[Printed, 3d.]

A.D. 1856, December 30.—N<sup>o</sup> 3097.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Madame Senèque.*)—"Improvements in manufacturing articles of "earthenware and other ceramic materials, and in the machinery "and apparatus employed therein." These are in machinery or apparatus, "whereby the moulds employed are made to rotate "rapidly, and the counter moulds to ascend and descend vertically," and also manufacturing "of flexible or expansible and "collapsible counter moulds." "The driving shaft of the machine "carries a fast and loose pulley, and, by means of suitable gearing, "imparts motion to a vertical shaft." The lower part of the "shaft is provided with sockets, and carries driving bands, "through which motion is communicated to a number of vertical "shafts by means of fast and loose pulleys separated by a collar, "on which the bands are guided by means of spring treadles "connected with the framework. The vertical shafts revolve at "bottom in a socket, and each carries a bed or table, in which "are grooves, in which blocks travel, intended to keep the "moulds on the tables. These blocks differ in shape and dimension, according to the moulds they are intended to receive, and "are fixed in the grooves by screws, whereby their distance is "regulated. The horizontal driving shaft is also in gear with a "transverse shaft supported in the framework and carrying "cams which actuate levers, which, in turn, communicate motion "to vertical spindles on which the templets are fixed. The cams "are so contrived as to keep the levers in a state of rest during "a half revolution, so that the templet may remain in the mould "as long as needful for the formation of the cup or other article. "The extent of movement is regulated by guide slots in the "standards which carry the levers. The templet carrier shafts "travel in guides, and rest on springs, for rendering the action "easy. The templet carrier shafts terminate at top in nuts, in "which work screws which carry the templets, and which are "tightened by collars. The position of these screws is over the

“ grooved tables before referred to. Weighted cords passing  
“ over pulleys are connected to the framework of the machine  
“ and of the templet carrier shafts, to keep the shafts at the top  
“ of their stroke when desired without stopping the driving shaft.  
“ There is a fly wheel to regulate the action of the machine.  
“ The transverse shaft, before referred to, carries another excentric,  
“ which acts on a lever working a rod, jointed to a forked lever,  
“ by which means the expansible counter mould is opened out.  
“ This lever is suspended to a slotted bracket, the position of  
“ which may be regulated to suit the height of the article to be  
“ moulded.”

“ The expansible templet consists in a number of ribs forming  
“ the body jointed to a bottom piece, and connected by jointed  
“ arms to a collar on a central stem, which is fixed at bottom in a  
“ socket in the bottom plate, and is screw-threaded at top, where  
“ it is fitted to the threaded shaft of the templet carrier. The  
“ collar is provided with screws or studs, which are acted on by  
“ the forked lever, which thus communicates action to the ribs,  
“ which are restored to position by a spring fitted between the  
“ collar and the bottom socket after the pressing action of the  
“ lever. Burnishing pieces are fixed to the templet in grooves,  
“ and calibres are screwed to it for giving the internal form.”

“ Another expansible mould is constructed of india-rubber or  
“ other flexible material, and provided with an air chamber with  
“ flexible sides and rigid top and bottom, into which air is ad-  
“ mitted through a tap or valve, and from which it is ejected in a  
“ compressed state into the body of the templet. A stem passes  
“ upwards through the templet, being screwed into a socket at  
“ bottom, and connected at top to the threaded shaft of the  
“ templet carrier. In grooves in this stem rods or ribs travel,  
“ being connected at top to a collar fitted round the stem and  
“ formed with a projecting part, on which the forked lever acts,  
“ thence acting on the ribs and imparting motion to them, the ribs  
“ being restored to position by means of a spring after the pres-  
“ sure of the lever; on the ribs are collars or projecting parts, which  
“ work the top of the air chamber up and down. Calibres for  
“ giving the inside form to the article to be manufactured, and  
“ and burnishers for polishing it, are fixed outside the templet.  
“ Jointed rods are connected at one end to the stem, and at the  
“ other to the burnishers and calibre pieces; these also assist the

“ return of the air into its chamber, which is further facilitated  
 “ by cords, which are fastened to the sockets and to eyes in the  
 “ templet. A flexible top piece covers in the collar and spring  
 “ to prevent escape of air.”

[Printed, 7*d.*]

1857.

A.D. 1857, January 21.—N<sup>o</sup> 182.

NEVILLE, SAMUEL.—“Improvements in machinery or apparatus employed in the annealing of glass and the firing of pottery ware.” These are, first, “the employment in annealing and firing furnaces or lears of lear pans or plates attached to endless chains or bands, or otherwise combined so as to form an endless table,” or a continuous table, “for receiving the articles to be annealed or fired while being passed through the furnace or lear.” Second, “the employment in annealing and firing furnaces or lears of lear pans or plates, caused to travel from end to end of a lear, or caused to receive and discharge their load in a lear, and to be again presented for a fresh load or charge, without the necessity of being removed from the lear by any means other than by the employment of a horizontally revolving platform or table.”

[Printed, 8*d.*]

N<sup>o</sup> 182\*.

NEVILLE, SAMUEL, by a disclaimer and memorandum of alteration, filed 28th August 1860, the title of the invention was altered to “Improvements in machinery or apparatus employed in the annealing of glass,” and the improvements stand as follows: “The employment in annealing furnaces or lears of lear pans or plates attached to endless chains or bands, or otherwise combined, so as to form an endless table,” or a continuous table, “for receiving the articles to be annealed while being passed through the furnace or lear.” And the employment “in annealing furnaces or bars of lear pans or plates, caused to travel from end to end of a lear to receive and discharge their load in a lear.”

[Printed, 4*d.*]



A.D. 1857, January 24.—N<sup>o</sup> 219.

GREEN, DANIEL.—(*Provisional protection only.*)—"Improve-  
ments in potters' kilns." These consist in "an improved method  
of consuming smoke." The furnace is constructed with a  
hollow bridge at the end of the fire-bars, communicating by a  
flue with the external air. "The bridge is open at the top so as  
to admit air, which becomes heated by passing through the  
flues to the fire." "In the crown or upper part of the furnace  
is another flue or passage, which communicates with an open-  
ing across the furnace, and this opening is by preference formed  
of two fire-clay tiles or binders, built into the arch forming the  
top of the furnace, so as to project downwards into the body  
of the furnace towards the fire-bars." It is preferred "to  
place the opening in the top of the furnace in front of the  
bridge, so that the air issuing therefrom drives the smoke and  
flame down on to the bridge, where it is met by the air, which  
there enters the furnace;" and it is also preferred to "construct  
the furnace longer than the furnaces generally employed in  
potters' kilns, and to form the body thereof with curved or  
inclined sides, so as to make the furnace wider in the centre  
than at the bridge and fire-door."

[Printed, 3d.]

A.D. 1857, February 7.—N<sup>o</sup> 355.

SKERTCHLY, JOSEPH.—"Improvements in, and in the manu-  
facture of saggars." These are, first, "the employment of such  
an amount of fire-clay in the structure of the saggars as shall  
require in their original manufacture a higher heat than is  
required for the ware which has afterwards to be burned in  
them." Second, "the employment of manganese to toughen  
the body of saggars and reduce their expansion in all firings  
subsequent to their original manufacture." Third, "the making  
the sides and bottoms of saggars from webs, tubes, or portions  
of tubes expressed from cylinders or other vessels by mechanical  
means." Fourth, "the thickening of the outer upper edge of  
the saggars" when made from the flat web, and bevil or round  
them off. By this means the part of the saggar is strengthened  
where it is liable to receive injury in setting and drawing from  
the kiln."

[Printed, 6d.]

A.D. 1857, February 23.—N° 528.

**KIRKHAM, JOHN.**—"Improvements in the construction of furnaces, ovens, or kilns for drying, baking, or burning pottery or earthenware, bricks, tiles, or other similar articles, and in the means of collecting and condensing or carrying off the smoke, gases, or vapours evolved from such or other furnaces or fire-places, or that escape or arise from the retorts and other parts of the apparatus used in the manufacture of gas." These consist, first, in constructing the furnace or oven built of bricks, with the crown or top arched over or otherwise made close and air-tight, and having one, two, or more fire-places "in the bottom part of the oven, and air is admitted over the top of the fuel from the sides or ends of the furnaces." The flame and heat circulates through the oven, and is then drawn down and through descending and horizontal flues constructed in the bottom of the oven, and from thence is carried through a second, third, or more ovens, whereby the spare heat may be beneficially employed in drying and preparing the articles of wares to be next burnt. The vapors are either conducted direct to the chimney or they are drawn through close condensing vessels in which are pebble stones or some such materials moistened by jets of water, and by this means they are condensed; instead of the water, lime-water or other chemical agent is employed. This mode of collecting or condensing gases, vapors, &c. is applicable to all furnaces, &c. Its application to retort houses, &c. is described, but the most convenient way of ventilating the retort or purifying houses is said to be as follows: building a central ventilating shaft so as to have a draught, and causing the enclosed roof of the retort houses to communicate by pipes or some such means into it. "In some cases, the smoke and gases thus collected in the shaft may be conducted direct into the atmosphere, but if required, the vapors and gases drawn from the retort houses may be purified by passing them through condensing chambers before being discharged into the atmosphere."

[Printed, 2s. 2d.]

A.D. 1857, March 21.—N° 804.

**BLACKBURN, BEWICKE.**—"Improvements in the manufacture of pens." These are "forming each pen of two pieces of glass or porcelain set in a frame" of some flexible material, "com-

“ posed of two parts, separating from each other in such a manner  
 “ that the flexibility of the frame will admit of the points of the  
 “ pen separating or expanding and contracting when writing.”

[Printed, 5*d.*]

A.D. 1857, March 28.—N° 869.

GIRARD, HIPPOLYTE BENIGNE.—“ Improvements in insulating  
 “ telegraphic wires or conductors, and in apparatus for stretching  
 “ such wires.”

These are compositions applied as first and second coatings for insulating. The first coating is “ composed of graphite or plumbago sifted and mixed with glue or size, kept liquid by a gentle heat.” “ The second coating is composed of two parts; for “ the first, linseed oil, sulphur, and gutta-percha ” are boiled together in certain proportions and manner; for “ the second melt “ four parts of orcanesson and one part of tar; place the substances forming the first and second parts of the second coating “ in a suitable pot,” and fuse them, then pass the wire to be coated through it, and allow it to cool.

Placing the wires in hollow bowls which fit one into the other; the bowls are of glass, porcelain, or earthenware.

The apparatus for stretching the wires, “ consists of a wheel or “ disc of porcelain, glass, &c., pierced through the centre to “ receive a metal axis, on one end of which there is a ratchet “ wheel, and on the other a handle; a paul from a post takes into “ the ratchet wheel.” To each side of the disc a wire is attached, each wire leading in a different direction “ so that on turning the “ handle both wires are stretched at the same time.”

[Printed, 7*d.*]

A.D. 1857, April 9.—N° 997.

HARLAND, JOHN.—(*This invention did not proceed to the Great Seal.*)—“ Purifying plastic clay used for the making of all kinds “ of earthenware, and for the cheaper and more expeditious “ manufacture of bricks, tiles, draining-pipes, and other articles “ of clay of a similar nature or description.” The clay “ is “ contained in a travelling box running on anti-friction rollers, “ and impelled by means of a rack and pinion, or other suitable “ mechanical contrivance, for the purpose of forcing the body of “ clay against the dies or bars employed for shaping it. These

“ dies or bars are fitted to the framing of the machine, and are so disposed as to admit of the box passing along each side of them during its forward motion. The lid of this box is fitted in grooves in which it is free to slide. As the box moves forward, the front edge of the lid comes in contact with the bars or dies, and is arrested, whilst the box with the clay continues to travel onwards, and forces the clay through the moulding dies. The purifying of the clay is accomplished by forcing it through a grating of any desired degree of fineness, placed either in the lid of the box or at the end thereof, so that on starting the machine the clay will be forced through such gratings, which are made sufficiently fine to exclude small stones, &c. This purifying process may be carried on simultaneously with the manufacture of bricks or other articles.”

[Printed, 8d.]

A.D. 1857, April 25.—N° 1166.

TONKS, STEPHEN, BREEDON, JOSEPH, and BREEDEN, WILLIAM.—(*A communication.*) (*This Invention did not proceed to the Great Seal.*)—“ A new or improved gas burner.” “This is an argand gas burner, constructed of earthenware, china, or other semi-vitreous substance.”

[Printed, 8d.]

A.D. 1857, May 6.—N° 1282.

BOUSFIELD, GEORGE TOMLINSON.—(*A communication.*)—“ Improvements in machinery for pulverizing clay and other substances.” These are as follows :—The clay “ is passed through a pair of grooved rollers, one of which is fixed on the main shaft of the machine.” The main shaft is driven by an engine or other power, and communicates its motion by a belt to a pulley on a beater shaft. The beaters are arranged in a spiral on the heater shaft, and so as the pitch of the spiral may be altered as required. The beaters work within the grated cylinder, which revolves in the opposite direction. The clay falls through the gratings; “ the stones which do not pass through are moved along by the beaters, and are discharged by the delivery shoot at the end.” “ The clay or other substance which falls through the gratings is carried by aprons to the grooved rollers, which may be below the machine, and by passing between the rollers, the clay or other substance is still further crushed or pulverized.”

[Printed, 10d.]

A.D. 1857, May 7.—N° 1296.

**DOLLÉANS, LOUIS CHARLES.**—"Improvements in ornamenting porcelain, china, opal glass, and similar products, by lithographic, chromo-lithographic printing and gilding." These are, first, "the application of proofs of drawings lithographed in several colours, and transferred on porcelain. These designs are the reproduction of paintings on porcelain, without any touching up, either with a brush or the hand." Second, "the employment of proofs of drawings engraved either hollow or in relief, on steel, copper, or wood, transferred on lithographic stones, and then printed by lithographic means."

In the description of the process it is stated that "there should be as many stones as there are colors in the design to be copied." "The successive application of the stones, one after another, produces the complete design." "These are the same means as ordinary chromographic impressions, the only difference being that the dark colors are printed first." Porcelain colors reduced to the finest powder are put on the impression in varnish upon paper, previously prepared with glue or some such substance. The impression is transferred to porcelain in the usual way, and the article baked.

Another "means" consists "in executing the design, not by degrees, as for the chromography, but a design entirely finished, but more lightly done than for a design printed in a single colour. The design must be made in purple, violet, or brown, according to the hue desired to be produced. The other colors, destined to color this first proof, may be applied in a plain or varied coat, but not touching the white parts. This process is called bold colored lithography."

[Printed, 4d.]

A.D. 1857, May 11.—N° 1320.

**SIEMENS, CHARLES WILLIAM.**—"Improvements in furnaces and in the application of heated currents." These are applicable to puddling furnaces, glass furnaces, &c.

First, "obtaining currents of heated atmospheric air by means of two regenerators and one fire or set of fires, by dividing the current of fresh air after it has passed the one regenerator and before it has reached the fire-place, by means of valves or dampers."

Second, "obtaining continuous currents of highly heated air or of flame, and the products of combustion by means of two regenerators and two four-way dampers, or pairs of slides, or other valves, to be worked simultaneously, by means of which the currents of heated air and of the products of combustion are transmitted alternately and in opposite directions through the regenerators, but pass continuously through the heated chamber and fire-place."

Third, "obtaining and passing through a puddling or reverberatory or other furnace currents, varying in their chemical properties from heated air to a thick carbonaceous or reducing flame, by means of regenerators, in combination with one or two, or more self-acting or mechanical feeding apparatus, under the control of the operator."

Fourth, "constructing and applying fire-places and regenerators and the heated currents therefrom, in such manner that a ridge of fuel is fed in from the top of the fire-place, and has its surface exposed to and acted upon by a current or currents of heated air proceeding from a regenerator;" also, "the application to such fire-places of the moveable bar or plate, by moving which the fire may be moved and fed, and the ashes discharged mechanically, without the necessity of opening the fire-place."

Fifth, "constructing and applying fire-places and regenerators and the heated currents therefrom in such manner that the fuel is fed in at the top of a solid inclined plane, and has its surface exposed to and acted upon by a current or currents of heated air proceeding from a regenerator."

Sixth, "producing intensely heated flame by mixing a current or currents of heated air proceeding from a regenerator with the heated gases produced by the partial combustion or distillation of coal, effected by the admission (either alone or mixed with steam) of a quantity of air insufficient to produce perfect combustion;" "also, the mode of varying the chemical nature of such flame by means of dampers or valves regulating the supply of air and gases."

Seventh, "constructing puddling, melting, and other furnaces, which require to be opened frequently for inspection or for the admission of workmen's tools, or for other purposes, in such manner that the currents of heated air ascend by a passage or passages from the regenerators to the heated chamber containing

"the materials or articles to be heated," whereby is obtained in "the chamber a plenum, or a pressure equal to, or where required, slightly greater than that of the atmosphere, and thus to prevent the entrance of cold air at the door or openings."

Eighth, "the construction and application of regenerators within, or in contact with steam boilers or pans, or similar vessels."

Ninth, "reversing or working the valves and dampers employed in working regenerator furnaces mechanically at suitable intervals, by means of a stream of water capable of regulation, acting upon buckets or floats;" "also, regulating the motion of the water in a self-acting manner, by the changes of temperature in the regenerators or in the chimney."

Printed, 2s. 8d.]

A.D. 1857, June 1.—N° 1543.

TINGLE, GEORGE.—"An improvement or improvements in machinery for the manufacture of articles of clay and other plastic substances." These consist in "the use of a valve in the piston or plunger, by which the interior of articles made of clay or other plastic material is fashioned, the said valve opening on the rising of the plunger, thereby admitting air beneath the said piston or plunger, and permitting the ready removal of the said piston or plunger from the said articles."

[Printed, 5d.]

A.D. 1857, June 4.—N° 1577.

BOOTE, THOMAS LATHAM, and BOOTE, RICHARD.—"Improvements in the manufacture of ornamental pottery, and articles made from clay and other like plastic materials." These are as follows:—"A thin piece of metal or other suitable substance, which forms the outline of the design, is fixed in the mould;" the upper edge of this piece of metal or other substance is made to project from the mould a distance corresponding to the depth to which it is thought necessary to insert the design. This is filled up with the colored clay or clays which are to form the design; the clay to form the body of the article is placed in the mould, and covered with the design in colored clay or clays previously filled in, and the whole submitted to pressure, after which the ornamental article is drawn out from the mould.

In some cases, "that part of the mould which is to correspond to the groundwork of the article to be manufactured is made to rise by springs or other means;" suitable colored clay is put into the hollow parts of the mould thus formed, and the clay to form the body is put in and the whole is pressed; "or the parts of the mould corresponding to the ornaments may be raised, and the ground part filled in."

[Printed, 3d.]

A.D. 1857, June 6.—N° 1599.

DOPTER, ALFRED JEAN VINCENT.—"Improvements in ornamenting cloth, wood, metal, leather, and other surfaces," among which porcelain is named. These are, "first, the use of a surface or plate, having compartments or recesses furnished with colours or metals in powder, agreeing and registering with a printed adhesive impression, on which such colours are to be sprinkled by a movement given to the whole of such recesses, in order to agitate and deposit the powders on the adhesive matter of the impression."

Second, "the use of either a stretched skin, cloth, or any other fabric, or a surface of any material which is placed on the assembled colours in the several compartments, for the purpose of transferring them to the impression which is to be coloured by them."

Third, "the forming a recessed surface for the powdered colours, either in wood, metal, skin, fabric, india-rubber, gutta-percha, paste, or other material, either by engraving, casting, wood-engraving, or by soldering or glueing parts together forming it."

Fourth, "by layers of powdered colours placed on any material having a plane or cylindrical surface."

[Printed, 3d.]

A.D. 1857, June 24.—N° 1771.

BOURRY, ERNEST AUGUSTE.—(*Provisional protection only.*)—"Improvements in apparatus or machinery for working, expressing, and moulding clay and other plastic materials." These are arranging a series of receiving boxes or cylinders around a central vertical axis, on which they are free to rotate, and supported by rollers traversing suitable circular rails; these boxes



are open at the top, and also in the side near the bottom, and furnished with mould plates, through which the plastic material is expressed or forced, and so moulded. A "cylinder and piston" is mounted in position, so that the receiving chambers may be "turned in succession immediately below it, and whereby it may be caused to descend & take effect on the plastic material contained, for the purpose of expressing & moulding it." Arrangements are made so as to admit the steam above and below the piston. "An inlet valve in the piston admits air to the "expressing chamber."

[Printed, 8d.]

A.D. 1857, June 25.—N° 1778.

BOURRY, ERNEST AUGUSTE.—(*Provisional protection only.*)—"Improvements in kilns or ovens for burning or baking bricks, tiles, and other earthen or ceramic matters." These are arranging them in compartments, so that the matters shall be first gradually heated, next burned or baked, and finally, gradually cooled. The kiln is arranged "in a circular form, placing the furnace on one side exterior of the kiln, and forming the "opening for the introduction and removal of the matters to be "operated upon diametrically opposite to the furnace;" the interior of the kiln is formed "into compartments, say, six, "separated by radial partitions, which at the extremity fit somewhat closely to the inner diameter of the kiln, but so that the "whole may move round therein. The lower part or bottom "consists of a perforated plate supporting the partitions, and the "whole is mounted on a central axis, on which it rotates. It is "further supported by rollers or wheels, and rails underneath; "spaces are formed above and below the compartments of the "kiln or oven, which are furnished with suitable partitions, in "order to control the direction of the heat and air in the compartments of the oven."

[Printed, 8d.]

A.D. 1857, July 1.—N° 1835.

NEWTON, WILLIAM EDWARD.—(*A communication from Charles Nègre.*)—"Improved processes for ornamenting metallic surfaces "and for producing surfaces in intaglio or in relief for printing "purposes." These are said to be, first, "the application or "combination of the process of galvanoplasty, or the electro-

“ deposit or reduction of metals, with the art or process of photography, for the purpose of obtaining engraved plates in intaglio or in relief for printing therefrom, or for obtaining ornamental designs or surfaces ;” “ particularly producing, by means of electricity, direct deposits or metallic images of gold, platinum, copper, &c. upon the surface of another metal, such as steel, iron, copper, &c., partially covered with a photographic varnish insulating and utilizing this superposed metal as a reserve or ground, for the purpose of attacking and biting into the more oxidizable metal forming the foundation or back, either by means of an acid or by electricity.”

Second, “ effecting by means of electricity direct metallic deposits upon photographic images obtained by means of a metallic salt.” In reference to this subject it states that designs are produced “ of different colors, gold and platinum upon porcelain, earthenware, stoneware, &c. ;” for this purpose an engraving in relief is produced “ by printing through an ordinary negative on the layer of bitumen placed upon a plate of copper or silver, &c. ;” by a solvent the metal is “ laid bare at the parts corresponding to the shaded parts of the design. The plate is then immersed in a bath of sulphate of copper,” and the copper deposited to a certain thickness. On obtaining from these engraved plates a proof, formed of a fusible and volatile matter mixed with a metallic oxide and applying this proof to porcelain, &c. “ the design will become solidified by the action of heat and the color will be brought out.”

[Printed, 5d.]

A.D. 1857, July 8.—N<sup>o</sup> 1896.

BRIANCHON, JULES JOSEPH HENRI.—“ Improvements in colouring and ornamenting glass, porcelain, earthenware, and other ceramic substances.” These are said to be giving them “ an unalterable coating or coatings, giving coloured and variegated reflections, such coating or coatings being prepared with metallic fluxes and colouring matters ;” this is done by means of fluxes and colouring matters. The fluxes are salts of bismuth or lead, the first preferred ; nitrate of bismuth is mixed in certain proportions and manner with resin and “ essence of lavender or any other essence which does not cause any precipitation in the mixture.” “ The metallic salts and oxides which assist in form-

"ing the colouring matters are salts of platina, silver, palladium, rhodium, iridium, antimony, tin, uranium, zinc, cobalt, chrome, copper, iron, nickel, manganese, &c., and sometimes salts of gold also, in order to produce in the latter case either the rich tint of shells or the reflection of the prism."

[Printed, 4d.]

A.D. 1857, July 23.—N° 2023.

BOUVERT, JEAN JACQUES, and PASCAL, FRANÇOIS ISIDORE JEAN.—"Improvements in smoke-preventing apparatus." These are, first, in "the arrangement and construction," and "with refractory or fire-proof ceramic materials." Second, "the composition of the refractory or fire-proof ceramic substances used in the furnace for forming the plastic material." "The principle of the invention consists, first, in presenting the combustible material to the action of the furnace," "and to use immediately the incombustible gases for the benefit of the furnace which has produced them, by collecting and conducting them directly into the incandescent part of the fire." A grate is described with an abutment at the back in which twelve elliptical cast-iron tubes are shown "coated with fire-proof material, and have the property of collecting the smoke by means of the void or vacuum produced by the first ignition established in these tubes." This smoke is burnt as soon as it enters these tubes, by admitting the surrounding air by three other tubes. The refractory or fire-proof composition is prepared as follows: first, very plastic and aluminous clay in fragments is burned for at least thirty hours at about thirty degrees of Wedgewood's pyrometer, and while white hot is precipitated into the coldest water, then pulverized and sifted in order to obtain "a uniform quality of cement;" second, like clay is mixed with water and strained, washed, and sifted, and allowed to settle; the paste is mixed with the above calcined material. The proportions of this composition may be varied; it is composed of clay, cement, and white sand. "When the parts are moulded they are submitted to desiccation, and to baking or burning, at a temperature of thirty degrees of Wedgewood's pyrometer. In some cases they may be saturated with carbon in order to give them greater consistency."

[Printed, 10d.]

A.D. 1857, October 15.—N° 2641.

NEGRETTI, HENRY ANGELO LUDOVICO, and ZAMBRA, JOSEPH WARREN.—“Improvements in producing graduated “ scales, and other signs, letters, numerals, characters, and pictorial “ representations upon porcelain and other ceramic and enamelled “ materials, which improvements are applicable to the graduated “ scales of meteorological and other philosophical instruments.” These are “the production of graduated scales and other signs, “ letters, numerals, characters, and representations,” by etching upon it in a similar manner as etching upon glass by “the use of “ hydrofluoric acid or fluoric acid gas.”

[Printed, *8d.*]

A.D. 1857, October 28.—N° 2744.

GREENING, WILLIAM.—“Improvements in enamelling and “ ornamenting metals and other surfaces.” The acids from the colors employed are extracted “by passing such color through “ lime-water or other alkaline solution.” The colors are floated in a bath, the gravity of which has been increased “by the addition of potash, chloride of sodium, or any other agent free from “ acid, to the water,” “metals such as gold, silver, &c., in the “ form of fine dust, filings, or their foil” may be added. A galvanic battery is used “for the purpose of mingling the colors so “ as to produce the marbling effect desired. The surface to be “ enamelled is laid gently upon the surface of the floating colors, “ and ” placed in the enamelling furnace, “and heated from 170° to “ 200° F. for about six days,” is afterwards “varnished, polished, “ and reburnt.”

[Printed, *8d.*]

A.D. 1857, October 30.—N° 2762.

PRIDEAUX, THOMAS SYMES.—“Improvements in apparatus “ for regulating the supply of air to furnaces.” These are, first, “ the simultaneous introduction of air by a self-acting apparatus “ at the mouth and back of the furnace, and the application of a “ self-closing valve to the exterior of the furnace mouth, the edge “ of the valve box shutting against the margin of the furnace “ instead of entering within it.”

Second, “the regulating the supply of air to furnaces with a “ surplus power of draft by connecting the damper with a gradually self-closing apparatus.”

Third, "the regulating the supply of air to furnaces where the draft is assisted by a steam jet, by placing this jet under the control of an automatic apparatus, which, upon increasing power being given to the jet after coaling, shall gradually reduce this power to the average pitch demanded."

Fourth, "the regulation of the supply of air to the kilns or furnaces used in the manufacture of pottery by means of a self-closing valve in communication with air chambers at the sides of the fire-place."

Fifth, "the employment in self-acting apparatus of the principle of the balance, wherein a vessel moving freely on a horizontal axis, fluid gradually descends at a position less distant from the line of support by a series of steps."

Sixth, "the employment of the principle of immersion or the float where the cistern is a closed vessel entered by a closely-fitting axle."

Seventh, "the application of flexible vessels in the construction of self-regulating apparatus."

In reference to the fifth claim it is stated that the self-acting apparatus used in combination with the apparatus explained in this patent and in patent N° 3000, 1853, may be varied, but those preferred are as follows:—"A wheel, having a hollow periphery to contain fluid, and divided radially by partitions, each having a small hole, such partitions temporarily arresting the flow of the fluid, and prolonging the time of its descent. On one side there is a well, into which all the fluid ultimately arrives, when the extent of closing of the air-regulating apparatus has been obtained. There is a passage between the well and the opposite side or diameter of the wheel, through which (on turning the wheel so as to bring the well above the horizontal position) the fluid runs to the opposite side of the axis, when the fluid will only again reach the well by passing through the series of partitions in the hollow periphery, as the wheel moves on its axis in a direction to bring the well below the axis of motion of the wheel." Or in place of this arrangement the float may be employed. "Two floats or plungers are so adjusted with reference to two cisterns, that by altering the relative level of the ends, by causing either the floats or the cistern vessel partially to revolve on an axis, when the plunger or float on one side shall be at the bottom of the cistern, the plunger or float on the other side shall be at the top of its cistern." Or "the fluid used in the self-acting apparatus may be

" moved by the action of a flexible or bag piston in place of a solid one, the flexible or bag piston driving the fluid through a small passage."

[Printed, 10*d.*]

A.D. 1857, December 9.—N° 3045.

WESTENDARP, CHARLES, junior.—"Preparing a material, a substitute for ivory, which he proposes calling 'artificial ivory.'" It is stated that it may be used as a substitute for a great many things, and among these "enamelled china" is named. The material is manufactured by combining "small particles of ivory, bone, wood, glass, cotton, wool, or similar articles," with gums or other resinous materials, "by pressure or heat, or both, or with spirit oils, or any similar vehicle or solvent."

[Printed, 4*d.*]

A.D. 1857, December 24.—N° 3164.

BURLEIGH, BENJAMIN, and DANCHELL, FREDERICK LUDWIG.—"Certain improvements in the manufacture of vessels, plates, or utensils used for domestic, sanitary, electric, and manufacturing purposes." These consist, first, in treating "carbonaceous matter, such as coke, animal or vegetable charcoal, Boghead ash, gas carbon, soot, lamp-black, or other suitable material, each by itself, or mixed and rendered plastic by means of moist bituminous, resinous, gummy, oleaginous, saccharine, glutinous, or other suitable cementing medium, and to force the said materials into moulds," using the "percussive force produced by the steam hammer or other power," to produce meat-safes, tanks, cisterns, casks," "crucibles, retorts, assayers' muffles, muffle plates, cupolas; also, cells, cylinders, plates for batteries, and electrodes for electro or galvanic purposes, receptacles and other articles for photographers; screens, respirators, and plates in general for purifying air, tubes, hollow or solid blocks, cylinders, columns, and similar objects for conducting fluids; filters, charcoal pencils, tobacco pipes, moulds for casting metals, also articles used in the manufacture or casting of glass."

Second, the application of solidified carbon to the above articles.

Third, coating articles of solidified carbon with silicious glaze, varnish, or lacker, to protect them from fire, or "for the purpose of retaining fluids or gases."

[Printed, 4*d.*]

A.D. 1857, December 29.—N° 3182.

**MOUROT, VICTOR.**—"Improvements in furnaces for heating kilns and ovens used in the manufacture of pottery and earthenware, part of which improvements are also applicable to furnaces generally." These are, first, constructing them "so as they may be fed with fuel from the bottom upwards." Second, fed in this way and "out of a truck;" for this purpose employing a grate having a portion capable of rising up and down in a frame, and "the frame in which the moveable portion of the grate slides so arranged, that a truck of coals or other fuel can be wheeled beneath it, the bottom of the truck being moveable and constructed of fire bars, and of the right size to fit within the frame;" the "moveable portion of the grate is withdrawn horizontally out of the frame," so that the heated fuel "rests on the top of the coals or fuel in the truck; the bottom of the truck is then lifted up by means of a lever or otherwise into the position of the moveable portion of the grate which was removed, and is held there by means of a catch."

[Printed, 1s. 4d.]

A.D. 1857, December 30.—N° 3193.

**HARMER, RICHARD.**—"Improvements in cigarettes." These are "the application of tubes or mouthpieces to cigarettes of glass, porcelain, pipeclay, or ceramic material," in the manner described. The glass, &c. is "in the form of a short tube of the size of the cigarette, the opening at one end of which is contracted, while the other end is of the full size, and receives a portion of the material forming the cigarette. The paper case of the cigarette is cemented to the exterior of the tube, and extends the length required for the cigarette."

[Printed, 5d.]

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## 1858.

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A.D. 1858, January 22.—N° 120.

**BASFORD, WILLIAM.**—"Improvements in kilns or ovens for burning or firing bricks, tiles, pipes, and pottery, or earthenware, and in the mode of charging the ovens, or placing or

"setting the articles that are to be fired therein." These are, first, conducting every alternate fire draught under the floor to the central hole of the oven, and every alternate fire draught by holes or openings made in the top or covering bricks of all the passages.

Second, "arranging the fire draughts or passages in parallel lines across the oven from side to side, having mouths or openings at back and front, or at each end of the fire draughts, which may, however, be divided at the centre, if required." By this means chambers or hollow compartments are formed, and these chambers are claimed.

Third, "constructing a square kiln with parallel fire draughts, extending from back to front, as in the round one just mentioned," and surmounting "such kiln with a cone or dome top."

Fourth, forming a number of holes in the dome, so as to be able to close, partially or otherwise, one of more of these openings, as may be required, so that the heat may be concentrated on any particular part. "At the base of the cone there is a set off projecting inwards, all round the inside, for the purpose of narrowing the top of the oven."

Fifth, constructing kilns so that the heat from one half of the mouths is conveyed partly up the flue by the wall of the oven, and partly under the floor of the oven, the heat from the remaining half working up the flue, thence under the floor to the centre hole of the oven.

Sixth, "making the bricks for the walls and floors of the chambers of a combination of fire clay and flint chippings or calcined flints," pounding and passing them through a riddle or sieve with about quarter inch meshes. "Rough sandstone of a refractory mixture pounded coarsely may also be used."

Seventh, "the construction of temporary walls within the firing chambers for the purpose of taking off the superincumbent weight of the articles to be fired from those beneath them;" across these temporary walls, between which the articles to be fired are packed, bricks are placed, thus forming another floor, on which may be placed another series of articles to be fired.

[Printed, 1s. 2d.]

A.D. 1858, January 28.—N<sup>o</sup> 154.

SPENCE, WILLIAM.—(*A communication*).—"An improved pot for chimneys and ventilation." This is manufacturing pots of



clay, &c., having "an inclined surface in combination with an outer  
 " and inner cylinder or shaft, so arranged as that the mouth of  
 " the inner shaft may be protected and relieved from pressure."  
 The outer shaft or cylinder rises above the upper edge or lip of  
 the inner shaft, it is supported by fillets just above the inclined  
 surface so as to leave spaces, so that "the current of the external  
 " atmosphere striking against the inclined surface will be deflected  
 " upwards."

[Printed, &c.]

A.D. 1858, February 11.—N° 258.

LOOKER, BENJAMIN, junior.—"Improvements in sockets for  
 " receiving telegraphic and other posts or uprights." These are,  
 " the sockets are composed of earthenware, by preference of stone-  
 " ware, the exterior being glazed," the interior glazed or other-  
 wise. "Each socket is made with a foot or enlargement at the  
 " lower end, and the bottom is closed so as to prevent moisture  
 " or water passing up from below into the interior of the socket."

[Printed, &c.]

A.D. 1858, April 26.—N° 922.

LEE, EDWIN EVETTS.—"Certain improved modes of applying  
 " vitrifiable materials for the ornamentation of metal buttons,  
 " clasps, and other articles of dress, and which said improvements  
 " are also applicable to the ornamenting of gilt jewellery, book  
 " clasps and mounts, also parts of lamp-stands, chandeliers, and  
 " other such like articles made in dies, moulded, or formed in  
 " any other way." The vitrifiable materials are glass, china, or  
 earthenware, "providing that they are so compounded that they  
 " will vitrify at a heat below that that will melt or destroy the  
 " metal to which such ornaments may have been applied." The  
 general principles of the improvements are as follows:—The  
 figure, whatever it may be, is cut or filed out in metal, "taking  
 " care that the outline of the letter in front is a little larger than  
 " on the back side." This is laid down on a plain metallic  
 or other surface, face downwards, into the cavities, the vitreous  
 material is pressed so that the entire cavity may be filled up, having  
 a good portion "to stand above the metal on the back side,"  
 after this the surface may be polished, &c. &c.

[Printed, 10d.]

A.D. 1858, May 31.—N° 1221.

**GIRERD, JEAN 'BAPTISTE, and WOHLGEMUTH, PAUL FREDERICK.**—(*Provisional protection only.*)—"Improvements in "ornamental staining, dyeing, fixing designs, writing, letter press "and type printing, & cyphering, and colours on wood, or any "other substances; also extracting, transferring, or discharging "colours from the same." These consist in "shapes, forms, or "configurations accurately modelled, designed, cut out, or manu- "factured, such being placed on the different "substances to be decorated; "thus effectually acting in such a manner (by the "instrumentality of light and shade on the surface) as to preserve "uniformly the original ground forming the drawings, &c., as "are sought to be reproduced from the influence of light," &c.

[Printed, *8d.*]

A.D. 1858, June 7.—N° 1282.

**VIGERS, EDWARD.**—"Improvements in the manufacture of "bricks and other articles moulded or formed from clays." These consist in employing the refuse after the distillation of the Torbane mineral (Boghead coal), by "combining and treating "of the said material with clays." Different proportions of the Torbane mineral refuse are used with the clays according to the result required.

[Printed, *4d.*]

A.D. 1858, July 12.—N° 1558.

**NORTHEN, WILLIAM.**—"The application of stoneware or "earthenware, colored or plain, to improved and original de- "signs." These are, first, "double socketed half pipes," "with "or without side flanges or tongues and grooves, and attaching "seats to the pipes." These seats are angular pieces, which can "be attached to the socketed ends and continued the length of "the pipe if necessary." Second, the mode of laying "pipes for "drains in connection with side-flanged or tongued and grooved "rests, and covering "such pipes by the corresponding half pipe. Third, the use of half plain "pipes in connexion with half double "socketed pipes, with or without side flanges or tongues and "grooves," "the lower portion forming a continuous drain, "whilst the top can be removed for cleansing," &c. Fourth, "the use of single socketed half pipes, with side flanges, tongues,

" or grooves, to be used, if necessary, in any way in connexion with " the pipes," described under the foregoing heads. Fifth, constructing sewers, &c., first, with a semicircle for the arch, and two segments for the base, "all joined together by means of side " flanges or tongues and grooves," with apertures in certain parts, and a hole "made in the centre of the arch, if necessary," for examining the sewer; second, a sewer, constructed of two of the semicircles like the arch above; third, a sewer constructed of four segments similar to the base above. Sixth, constructing cylindrical or square vessels, with an orifice at one side on the top " of sufficient diameter (varying according to the size of the " vessel) to admit of a ground-in stoneware stopper, with a hole " through the top, or a screwed wooden-shouldered bung, with a " hole through the centre to admit of a tap;" another hole is in the top for a vent peg. Seventh, constructing jars or vessels so as to be hermetically sealed as follows:—On each side of the neck, which has a groove round it, are two projections or niches, according to the lid used; the lid has a projecting ring inside, with two portions of the ring cut away sufficiently wide to admit of the lid passing over the projections, "two scotches inside " the lid " fit on the shoulder of the jar, "and by a slight turn " either the ring or scotches occupy the groove round the neck; " a slip of parchment, skin, or paper is pasted over the joint," or " to make it more secure, an india-rubber or elastic ring or collar " may be placed round the flange close to the inside top of the " lid." Eighth, mangers and troughs, with a projection inside and around the upper part of the trough, "thereby preventing the " food of the cattle from being wasted." Ninth, "applying " coloured designs in various colors to the exterior of stoneware " jars or bottles" by using the metallic oxides of the colour desired with the ordinary fluxes, afterwards "dipping them into a " white stoneware glaze, thereby preventing the extreme action " of the heat from destroying the colour."

[Printed, 7d.]

A.D. 1858, July 20.—N° 1637.

DOLEY, CHARLES, BIGLAND, EDWIN, and WORRALL, THOMAS HENRY.—"Improvements in ornamenting metallic and " non-metallic surfaces." These, among other things, are applicable to glass, china, and earthenware. They consist as follows:—The patterns are drawn on a plate of glass with a composition of

bees' wax, tallow, and pitch, and etched "in with fluoric acid." The composition is removed and the glass is embedded in plaster of Paris; the part etched is filled up with a composition of "bees' wax, shellac, tar, varnish, and gas black," and an impression taken on paper; this is damped, rubbed on to the article, the paper removed by soap and water, and the article put into a tank with "dilute nitric or other suitable acid." The article is afterwards washed with "a ley made of potash, lime, soap, and water," "when it will appear with the pattern sunk into" it. For some kinds of work the following is preferred. A sheet of metal coated with a composition of wax, tallow, and pitch, has a pattern drawn upon it, after which the pattern drawn is "cut or bit with nitric acid." The article to be coated is brushed over with "either of the above compositions," and washed "over with whitening and water;" the sheet of metal with the pattern is laid on, "the part cut out" is brushed with oil, and afterwards well washed with soap, and the article submitted to "the acid cistern or tank as before described."

[Printed, &c.]

A.D. 1858, July 22.—N° 1652.

BLAKE, BENJAMIN.—"An improved kiln for burning earthenware and other similar articles." The improvements are, first, "the novel arrangement of the fire-places in longitudinal kilns;" the fire-places are "arranged at intervals all along the outside walls of the kiln, similarly to those in ordinary round kilns, and in contradistinction to firing from the interior, and directly under the ware, as hitherto done in kilns of the longitudinal form." Second, "the employment of a series of arched shelves," made of fire-clay bars, quarries, or tiles, and fitted up throughout the entire length of the kiln one above another, and placed against "two bags or flues which are opposite." The general arrangement and construction of the entire kiln is claimed.

[Printed, &c.]

A.D. 1858, September 18.—N° 2106.

LUIS, JOZÉ.—(*A communication.*)—"A new manner for applying centrifugal force in the manufacture of the fecula of potatoes, of starch, of yeast, of porcelain paste, of paper pulp, and ultramarine, and the apparatus for carrying out the same." This is as follows:—A drum, which may be of iron, "pierced with holes

" in the vertical mantle," "about the eighth of an inch in diameter, " over this surface a metallic cloth is placed," and over this again " a tissue made of linen, wool or cotton." The material is run into this in a watery state, and the drum is made to revolve slowly and progressively until it is full, "when it is made to revolve at " its maximum velocity."

[Printed, 8d.]

A.D. 1858, September 27.—N° 2161.

LANDER, WILLIAM.—"Improvements in engraving and printing " for the purpose of ornamenting china and earthenware." These are for the purpose of doing so "in various colours." The subject is engraved in the usual manner, and from this many metal copies are produced by galvanic agency. From these several plates parts of the work are erased, "so that the portion of the engraving " present on each plate shall be absent from the surface of all the " rest." Each of the plates are restricted to one colour, "and " when the successive impressions are made by the several plates " on one sheet of paper," &c., the subject is complete "for trans- " ferring to the ware." An arrangement of plates "closed toge- " ther by a turn-screw, hold the paper for printing between them," so as to secure the plates and paper from shifting, is claimed.

[Printed, 5d.]

A.D. 1858, October 2.—N° 2195.

MONIER, HYPOLITE.—"A new gas burner." This consists of a conical shaped small tube of burnt plastic clay closed at its wider end, with the exception of a circle of small holes for the issue of the gas; this is fitted into a porcelain tube, which tube again is fitted on to the fork of the burner. This apparatus described, it is stated, has heretofore "been made of a single material, " either metal or porcelain, &c., the two tubes of either the " external and internal part of the burner having never before " been fractioned and made of different substances;" the object being to prevent "the heat penetrating into the apparatus.

By means of the above, and "either glass or any vitrifiable " transparent materials," replacing "the various appendages of " metal or any opaque substances, with which all other apparatus " are generally provided."

These are applied to all lamps.

[Printed 1s.]

A.D. 1858, November 6.—N° 2485.

CLIFF, JOHN.—“Improvements in the construction of kilns for “burning stoneware, red clay ware, porcelain, and all other kinds “of earthenware.” These are, first, in place of “bunges, saggars, “&c.,” using “hollow or solid pillars in connection with collars “of larger diameter, supporting at any desired height floors of “quarries (or any sort of pillar built up from bottom to top, which “support without collars of larger diameter by means of notches “or otherwise.” Second, “the more effectual consumption of “smoke,” by means of a series of hollow pillars and annular flue “and air openings at the top of the crown.” Third, “excluding “the air from the body of the kiln by means of an internal “lining” (reaching to the dome). Fourth, glazing by salt introduced within the kiln. The general combination of the parts is claimed.

[Printed, &c.]

## 1859.

A.D. 1859, January 3.—N° 30.

FURNIVAL, JACOB, FURNIVAL, THOMAS, DERBYSHIRE, JOHN, and EMERY, FRANCIS JOSEPH.—“Improvements in “apparatus for supporting articles of china and earthenware in “kilns and ovens.” These are as follows:—“Bars or rods of clay “or earthenware are formed or moulded with spurs or steps thereon “at intervals apart;” three or more of these “are combined together by an upper and a lower disc of clay,” and their lower ends are fixed in a lower plate. In some cases circular ring frames are used to be placed one above the other, and to be kept apart “by “moveable or fixed projections; each frame is provided with fixed “or moveable spurs or steps.”

[Printed, &c.]

A.D. 1859, February 11.—N° 388.

COGAN, ROBERT.—“Improved instruments for crushing and “mixing solid and liquid substances.” These consist first, “of “a stem with a flat, octagonal, round, or other shaped disc, and

“ the other end is spread out into the form of a bulb, the under part of which is hollowed out for the purpose of receiving and holding the lump of sugar or other substance, while pressure is being applied to crush it.” Second, a stem “ pointed at one end, and at the other is a round or oval bulb.”

[Printed, 8d.]

A.D. 1859, February 14.—N° 408.

**PARKINSON, JAMES.**—“ Certain improvements in coffins.” These are “ forming or manufacturing coffins, burial cases, or receptacles of earthenware or other similar plastic materials, and also forming an outer coffin case or receptacle for the protection of ordinary coffins, and to be so employed instead of the brick or stone vaults hitherto in use.”

[Printed, 3d.]

A.D. 1859, February 19.—N° 462.

**BASFORD, WILLIAM.**—“ Improvements in the method of and means for drying bricks and tiles preparatory to their being burnt, and also in the construction of kilns or ovens for burning such bricks, tiles, pipes, pottery, or earthenware, and in the mode of charging or placing these said articles therein to be burnt or fired, and also in certain appliances for regulating the heat therein.” These are, first, the mode of arranging, constructing and forming drying sheds, with a single or double flue, winding round the shed, and terminating at the extreme end of the shed; along and round the shed, also within the space enclosed by the flue, and about a foot or so apart, and about six feet high, are rows of shelves. Two other forms of sheds are described.

Second. Furnaces “ of any form having transverse and intersecting flues, and forming isolated cells and chambers.” In the specification of a former patent, N° 120, 22 January 1858, was claimed this “ arrangement of flues to circular or square kilns or ovens only,” now this is its application “ to all forms.”

Third. Ovens or kilns “ of all shapes, having transverse and intersecting flues, as mentioned in the last claim, and, in addition, mouths or furnaces to each flue, and in each or any side of the kiln or oven.” In describing these, reference is made to N° 120, 1858, and N° 10,020, 1844.

Fourth. Kilns, with chambers "on each side of the kiln; a space equal to one-third the whole breadth is left open, and every alternate flue is made to descend down the walls of the chambers, and pass under the floor of the open part, rising up along the sides of the chambers on the other side."

Fifth. Ovens or kilns without a middle space, and each alternate flue passing "underneath the floor of the chamber nearly to the centre, and then diverging at right angles to the right or left, rising up the side of the chamber until it reaches the top."

Sixth. The mode of forming the roof or top of square kilns as follows, using whole bricks, and projecting "inwardly each course over the subjacent one about two inches and a half;" stretcher bricks are laid amongst the others, the square walls of the kilns are carried as high as the top overhanging course, and a few courses of light bricks form a neck.

Seventh. The mode of forming the roof or cover of ovens or kilns as follows:—The furnaces have "the flues and chambers running parallel from side to side, and either having intersecting flues or not, so as to have between every third or fourth flue a partition or tie-wall, from and upon which the arches are turned for covering in the kiln;" tie-rods better secure the walls.

Eighth. "Forming the interior of the ovens or kilns by means of projecting ribbed bricks." These projections are "about one and a half inches from their sides," and "about two of them in the length of a stretcher, and one up the end of each brick;" these enable kilns to be set without the use of ordinary bricks round the walls.

Ninth. Charging or placing glazed goods in ovens or kilns as follows:—By placing "one row horizontal or flat, and the succeeding one vertical or on edge above the other in the chambers."

Tenth. "The mode of regulating the heat within the said kilns or ovens, by placing one or more courses of flat tiles, prepared of materials so as to stand the effects of heating and cooling in such a way as to cover up, either wholly or partially, the rents or spaces formed by the contraction of the goods, and allowing at the same time sufficient space for the draught;" over these place another row of flat tiles in such a way, that when necessary, by means of a shovel or such like instrument, they can be pushed close to the side of the neck, and also lie over the joints in the other tiles;" or, instead of the above, "round the top of



"the ovens a series of small flues, terminating in the neck, are formed; through these the heat passes off, and by covering partially the mouths of these with tiles as before, the escape of heat may in like manner be regulated."

[Printed, 11d.]

A.D. 1859, February 23.—N<sup>o</sup>. 496.

RUSSELL, SAMUEL.—"An improvement in the manufacture of handles for tea and coffee-pots, jugs, kettles, knives, daggers, and forks, or any other description of article to which handles are applied." This consists in stringing "pieces of ivory, cane, bone, horn, or fancy woods, glass, porcelain, or papier mâché, which would otherwise be useless," "upon a round, square, hollow, or solid piece of suitable metal, horn, or other substance of the required shape of the handle," fixing them "with cement or glue, and at each end either by ferrules, nuts, screws, pins, or solder," &c.

[Printed, 3d.]

A.D. 1859, March 1.—N<sup>o</sup> 541.

EDWARDS, JOHN.—"Improvements in stacking or holding biscuit, earthen, china, and glossed ware for firing." These are employing for each separate article "a ring frame or holder, with a rim or flange projecting inwardly, so as to occupy the whole or part of the centre of the ring."

[Printed, 6d.]

A.D. 1859, March 21.—N<sup>o</sup> 713.

LEONI, SIGISMOND.—"Improvements in the manufacture of useful and ornamental articles, surfaces, and works, parts of articles, and parts of machinery or apparatus, from talc and other silicates of magnesia, and from the same combined with other substances." The talc, &c., in powder, alone, or mixed with glass, felspar, lime, or alumina, is pressed in moulds of the form required, and "baked, burnt, or fired."

[Printed, 8d.]

A.D. 1859, April 7.—N<sup>o</sup> 871.

GARRETT, JOHN.—"Improvements in the construction of goblets, jugs, and other like articles." This consists in "pro-

"viding glass and earthenware drinking vessels" with a metallic "foot and handle or handles." The vessel is secured in its place by "making it fit at bottom on to a projection, or into a hollow" in the metallic foot, and causing the upper part of the handle " (which is connected to the foot) to clip the edge of the bowl."

[Printed, *ed.*]

A.D. 1859, May 26.—N° 1301.

DORN, CHARLES.—(*Provisional protection only.*)—"Improvements in kilns for baking or burning china, earthenware, and "bricks, and for other like purposes." These are, first, constructing the inside and outer wall of common brick, and the outer wall in the form of a series of concave vertical flutes or arches, and supported by iron standards, and bound by iron hoops, and the space between the two filled "with sand or other "imperfect conductor of heat."

Second, the "bottom of the kiln of fire bricks arranged "radially. Narrow wedge-shaped spaces are left between the "bricks, and the products of combustion descend through these "spaces to a central flue connected with the chimney or stack." Perforated walls upon a perforated arch or dome support the bottom of the kiln. The fire-places are made of flat bars arranged in a stair-like form. The flame and products of combustion enter the kiln through an annular channel formed between the edge of the kiln door and the inner wall, which "is "greatest at points midway between each fire-place, and narrowest "opposite the middle of each fire-place."

Third, "constructing on the top of the kiln a vat or reservoir" for holding slip, to be "evaporated by the waste heat of the kiln."

[Printed, *3d.*]

A.D. 1859, June 23.—N° 1514.

DOULTON, HENRY.—"Improvements in earthenware jars and "bottles." These are, forming in the interior of their necks, "projections at intervals apart, and at or near the upper surface "thereof." These are slightly inclined on the under surfaces. The cover or stopper fitting over the neck has a cylindrical projection "descending into the neck, on which are side projections, "which descend below the projections in the interior of the neck, "and with inclines on their upper surfaces." A ring of vulcan-

ized india rubber, &c., is clipped between these on turning the cover round.

[Printed, 6d.]

A.D. 1859, June 25.—N° 1528.

ROBERTS, JOHN.—“Improvements in filters.” This consists of an outer vessel of porous earthenware, pierced with holes above the level at which the filtered water stands, for the free circulation of air; in this is suspended a vessel of more porous ware, through which the water filters.

[Printed, 6d.]

A.D. 1859, July 30.—N° 1768.

SEITHEN, ANTON BRUNO.—“Improvements in cases or boxes, “ and in casings, hampers, baskets, and wrappers, for holding “ bottles, jars, and other articles.” These consist, first, in making such articles “ entire, or in part of cork,” also in making the bottoms of baskets, &c. of cork, and in covering bottles, jars, “ pots, and other articles of glass or earthenware, with cork,” joined together by cement. Second. Covers, &c., made of straw, &c., for packing bottles, jars, pots, &c. These covers are made over wooden forms. A string is tied in two places round the form, which serves as a foundation to which the rushes are secured, by passing a string “ either over one or more of the “ rushes according to their size, and then passing the string “ under the foundation string,” and so on. Other arrangements, modifications of the above, are described, for effecting this object. Covers are also made by making mats of rushes in a somewhat similar manner, and likewise without the use of string. Rushes are also attached to fabrics, preference being given that the rushes are laid in one direction, so that the mounted canvass, &c. may be “ cut into stripes of the required width and length.” Articles “ may be covered by having strands of suitable material “ wound round them in the form of a spiral,” and secured as above by string. These modes of forming covers, &c. are, it is said, preferable to those described in N° 1892, 1854, and N° 438, 1856.

[Printed, 10d.]

A.D. 1859, August 3.—N° 1796.

DOWLING, EDWARD.—(*Provisional protection only.*)—“Im-  
“ provements in rosettes or ornaments applicable to harness and

"other purposes." These improvements in reference to this subject are making such things of glass or porcelain.

[Printed, *8d.*]

A.D. 1859, October 6.—N° 2280.

HIND, ANDREW, and LOWENTHAL, JULIUS.—(*A communication from Gustav Gumpel.*)—"Improvements in the manufacture of pottery and china wares." These consist in "introducing clay or other plastic earth or compounds of a similar nature in a fluid or semi-fluid state into moulds composed of plaster of Paris, fire clay, or other similar absorbent material." The material preferred is composed of the following ingredients mixed in certain proportions, namely, German clay, fire clay, common salt, ground chalk.

[Printed, *8d.*]

A.D. 1859, October 17.—N° 2361.

BERRY, GEORGE.—(*Provisional protection only.*)—"Improvements in the construction of glass and earthenware vessels for containing fluids, particularly such vessels as are intended to contain fluids which may exert dynamic force on the stoppers of such vessels." These are constructing such vessels with two necks or orifices, "closed with proper stoppers, connected together in the interior of such vessels, and when the internal areas of such stopper are alike, the dynamic force, if any, of the contained fluids upon the stoppers is neutralized, and when the internal areas of such stoppers are unlike, then the dynamic force on the stoppers is diminished to the difference of the areas of the two stoppers."

[Printed, *8d.*]

A.D. 1859, November 2.—N° 2496.

HESS, RICHARD HEINRICH.—(*Provisional protection only.*)—"Improvements in gas burners." These consist in "making gas burners by pressing the materials used in the manufacture of porcelain or china in suitable moulds, and burning the same afterwards."

[Printed, *8d.*]

A.D. 1859, November 28.—N° 2691.

BOWER, JOSEPH.—"An improved method of preparing clay for the manufacture of crucibles, pots, and earthenware." These

consist in employing an acid, preferring muriatic acid, with water to dissolve the iron, lime, or magnesia contained in the clay, and washing with water.

[Printed, 3d.]

A.D. 1859, December 9.—N<sup>o</sup> 2794.

**SPILLER, JOEL.**—"Improvements in drying articles or bodies "formed of plastic clay." These are as follows:—The articles to be dried are placed or stacked upon the floor of a closed building or shed, the floor has a number of openings in it "which communicate with flues or passages below it, and the passages communicate with vertical flues or chimnies formed in the side or "end walls of the building or outside of it." The heating furnace, a close one, may be outside, in close proximity to the side or end wall of the building. Immediately above the ignited fuel are openings for the introduction of atmospheric air, which afterwards passes along with the products of combustion into the drying building, and finally passes into the chimney.

[Printed, 10d.]

1860.

A.D. 1860, January 17.—N<sup>o</sup> 118.

**BROOMAN, RICHARD ARCHIBALD.**—(*A communication from Benjamin Paraf Javal.*)—"Improvements in extracting substances "from cereal grains, and some of their products, and the application of the substances extracted." The solution containing the gluten is made by submitting the grain or substance to one of the following liquids:—first, "of most organic acids; second, of "most mineral acids; third, of most soluble oxides; fourth, of most "kind of salts." The "precipitation of the glutine is effected by "the neutralization of the solution, if it is alkaline or neuter, by "the addition of certain acids, even if the liquor is acid; by the "addition of a number of salts, alkaline, neutral, or acid; by the "introduction of substances capable of forming insoluble combinations with glutine, such as tannin, or instead of using one "substance, many may be employed." The gluten made in this way, it is said, may be employed for a number of purposes, and among these are named for binding together glass, &c.

[Printed, 4d.]

A.D. 1860, January 20.—N° 149.

FERTÉ, FERDINAND JEAN JOUBERT DE LA.—“Improvements  
“ in reproducing photographic and other pictures, engravings,  
“ prints, devices, and designs on the surfaces of glass, ceramic  
“ and other surfaces requiring to be fired, to fix the same thereon.”  
This consists in “coating such substances with a sticky com-  
“ position acted on by light, then printing on the surface in the  
“ manner of photographic printing, thus destroying the sticky  
“ composition where the light acts upon it, and, consequently,  
“ causing a suitable coloring matter to adhere to such portions of  
“ the surface as remain sticky.” The sticky composition, con-  
sisting “of bichromate of ammonia or other salt of chromic acid,  
“ and honey, or other similar sticky organic substance (treacle,  
“ grape, or cane sugar, sirop de fromant) and albumen,” is claimed;  
the proportions and mode of mixing are detailed.

[Printed, 4d.]

A.D. 1860, January 24.—N° 171.

GATELLIER, EMILE LOUIS.—“Improvements in the manu-  
“ facture of the crucibles, muffles, or pots used for the reduction  
“ of the ores of zinc.” Zinc, it is said, vaporises through cru-  
cibles, &c., and to prevent this the crucibles, &c. are coated with  
a vitrifiable material such as “the salts of oxyds of potassium, of  
“ sodium, of lime, or of manganese, of lead, and other analogous  
“ substances,” and dried and burnt.

[Printed, 3d.]

A.D. 1860, January 30.—N° 234.

HOLMES, NATHANIEL JOHN, and CORDON, JAMES.—(*Pro-  
visional protection only.*)—“An improved method of purifying  
“ fluids or substances by electro-magnetism.” This is as follows:  
—“The slip, liquid flint, clays, or other materials, when in a  
“ proper fluid state, are passed through a narrow trough or closed  
“ box, into the interior of which a series of electro-magnet poles  
“ are placed, whereby the slip, in its passage through the box or  
“ trough, is brought successively into contact with each of these  
“ electro-magnetic poles, and the particles of iron, nickel, or other  
“ magnetic substances incorporated in the mass are withdrawn by  
“ adherence to the electro-magnets.”

[Printed, 3d.]

A.D. 1860, February 6.—N° 311.

SKERTCHLY, JOSEPH.—“Improvements in apparatus for “evaporating the moisture from slip for potters’ use.” These are said to be, first, “in the construction of the apparatus.” Second, “the employment of a steam chamber, composed wholly or partially of cast iron or other cast metal, or alloy of metals.” Third, “the employment of studs, stays, bolts, angle plates, or “their mechanical equivalents, as strengthening pieces for the “steam chamber,” “whether the said strengthening pieces be “cast thereon or affixed thereto.”

The apparatus consists of “one or more pieces of metal, by “preference cast iron, having cavities, grooves, or other spaces “left between its upper and lower surfaces, of sufficient capacity “to contain the requisite quantity of steam for heating the slip. “The cavities, grooves, or other spaces constituting the steam “chamber or chambers, may be formed by means of sand or other “cores, or by any other convenient method of casting, or the “steam chamber may be formed by connecting two or more “plates or castings together, but leaving a space between them.” In this case the plates or castings are secured by ribs, &c. “Around “this steam chamber sides of any suitable material are placed, so “as to form a vat to receive the slip.”

[Printed, 6d.]

A.D. 1860, February 18.—N° 449.

BEWLEY, RICHARD, junior.—(*Provisional protection only*).—“Improvements in the mode of heating the drying rooms, sheds, “or stories used by potters and manufacturers of bricks and tiles.” These are “adapting and applying a current or currents of heated “air, produced or impelled by mechanical means.” “The air is “heated by passing through a ‘cockel,’ or a system of iron pipes, “enclosed in an oven,” and is forced into the rooms, &c. “by “means of a fan or other pneumatic apparatus driven by mechanical power.”

[Printed, 6d.]

A.D. 1860, March 1.—N° 577.

BLASHFIELD, JOHN MARRIOTT.—“Improvements in burning “pottery and china wares, and in kilns employed for such purposes.” These are for the purpose of doing away with seggars,

and also to prevent the ware being injured by the contact of the flame and products of combustion. The exterior wall of a kiln may be of any available shape, with a conical or suitable chimney. "The roof or ceiling of the kiln is of open brickwork, the interior of the kiln is lined with fire-bricks; at a short distance from the interior fire-brick lining, and within the kiln, a close chamber is constructed of fire-brick, a space being left all round the exterior of the chamber and the inner lining of the kiln. The chamber is tied or bonded at intervals to the outer walls of the kiln, leaving free space, however, for the flames and products of combustion to pass under the floor of the chamber, and up to and over the roof or ceiling of such inner close chamber, and from thence up through the open brickwork in the roof of the kiln, into the chimney or cone above." The ware is stacked on one another or has supports. The interior of the chamber may be divided by temporary floors of fire clay tiles. The space between the inner lining and outer surface of the closed chamber is divided by thin partitions of fire clay, from the bottom upwards to a certain height, so as to compel the flame "from each firehole to rise towards the roof, and not to pass laterally, so as to interfere with each other."

[Printed, 7d.]

A.D. 1860, March 7.—N° 623.

CHAPIUS, CHARLES ANDRÉ.—"A new or improved process in manufacturing and ornamenting ceramic products chemically." This consists in obtaining designs "in crackel, china, mosaic, and other various decorations," as follows:—These bodies are impregnated by dipping them "alternately in a hot and cold state, with ammoniacal or alkaline salts, or with acidulated liquids, holding metals in solution, the nature and employment of which" is determined by the colours wished to be produced. The metals employed are "iron, copper, silver, platina, and others, such as rhodium, iridium, palladium, osmium, ruthenium, and, in fact, all matters known in chemistry, and applicable for the purpose."

[Printed, 3d.]

A.D. 1860, March 23.—N° 757.

MEYER, FREDERICK CHRISTIAN.—"Improvements in machinery for copying ornamental figures and forms." These are



" attaching both the block and pattern to a moveable table in such a position in respect to a revolving drill or cutter and a stationary tracer point, imparting to the table such a continuous pressure towards the points of the tracer and the drill, and connecting the table to a system of slides, by which it may be readily moved vertically and transversely, that the drill will remove from the crude article the exact amount of material at the points regulated by the pattern." "The most elaborate ornaments may be transferred to cups, vases, and other circular objects of any material which can be operated on by a revolving drill or cutter," and "it may be applied to the copying of busts," &c.

[Printed, 7*d*.]

A.D. 1860, April 27.—N° 1057.

NORTHEN, WILLIAM.—"An improvement in the internal construction of kilns used for the burning of stoneware or earthenware of every description." This has for its object economizing fuel, "a more equal distribution of heat, and more perfect combustion of smoke." The first is effected by causing the fire to reverberate through manifold tubes, pipes, or flues previous to its escape from the kiln: the second, by the heat passing through the said tubes, pipes, or flues previous to making its escape through a centre tube, pipe, or flue of the kiln; the third, by the smoke passing through so long a range of confined heat. The interior of the fire-place is built round the required height of the fire-hole, upon which are fixed either "socketed, dovetailed, bracketed, or otherwise jointed, tubular pipes of the required diameter, varying according to the size of the kiln;" these are carried "up to the crown, and by placing a band or retort on the top," it causes the heat "to reverberate through other tubes to the bottom, and thence communicating under the floor with a similar tube in the centre of the kiln, it is passed through the same to the summit of the crown, where it either makes its exit, or may be continued through tubes to the funnell of the kiln."

[Printed 1*s*. 3*d*.]

A.D. 1860, June 5.—N° 1377.

JARDIN, JOSEPH, and GIRARD, PAUL ADRIAN.—(*Provisional protection only*).—"A new or improved machinery for manufac-

"turing bricks, tiles, and other ceramic products." The clay, after being moulded into a rectangular form or brick between two cylinders, is conducted by means of an inclined plane on to a carriage placed on an endless cloth. It is then divided longitudinally into two equal parts, each the width of a brick, by means of a wire stretched across the machine. Each carriage is furnished with parts at distances equal to the length of a brick placed perpendicularly at their front ends. These parts come in contact with the arms of a double movable mill or drum, and communicate a rotary movement to it, forcing down parallel arms which obey this motion, and thereby cut, by means of a wire with which they are supplied, the piece of clay the length of a brick. After this operation each carriage carrying a brick is transported right and left of the machine by means of an endless cloth. Hoppers placed above the forming cylinders distribute sand continuously to prevent the clay adhering to them."

[Printed, 3d.]

A.D. 1860, June 23.—N<sup>o</sup> 1531.

JOBSON, ROBERT.—(*Provisional protection only.*)—"Improvements in moulding articles of earthenware or porcelain." These are making a plunger of two parts, the interior or body smaller than the article to be moulded, and "it is made up to the full size by a ring of metal fitted on to it. The body of the plunger is made conical, and the ring which fits over it is split at one side, so that it is expanded when it is forced on. And in order that no space may be left between the two ends of the split ring, a feather is formed on the body of the plunger accurately to close this space." This compound plunger is used in the ordinary way, but "when the plunger is to be withdrawn from the mould, the ring by a suitable contrivance is held down, while the body is partly withdrawn." Instead of a spring ring, it may be made of several parts arranged round a body. "In the manufacture of telegraphic insulators, it is required to produce two cups one within the other, the inner cup springing from the bottom of the outer, then the portion of the plunger which produces the exterior of the inner cup is similarly retained in the mould while the body of the plunger is withdrawn, and this part then springs or moves outwards so as to clear the article."

[Printed, 3d.]

A.D. 1860, July 19.—N° 1747.

SHAW, ISAAC BROAD, and SHAW, JAMES EDMUND.—(*Provisional protection only.*)—"Improvements in the ornamentation or " decoration of earthenware, porcelain, glass, and other articles, " and producing the designs, figures, patterns, and roller moulds " used in such process, such roller moulds being also applicable " for the casting of rollers used in typographic and lithographic " printing." These are, first, a piece of laminated lead or other metal is taken and a design worked upon it with a plumbago style or pencil into relief and a cast taken in plaster of Paris; "or, " the above object may be attained by tracing the design in wax, " soap, or clay, or the design may be engraved in wood, or otherwise produced."

Second, the design obtained as above is pressed into clay, &c., and a composition of glue, treacle, &c. run in upon the design in the clay.

Third, two sheets of glass with their surfaces oiled are brought within about one quarter of an inch of each other, when the composition above mentioned is run in between them and allowed to cool. This is afterwards cut with dies, &c. into any desired design or pattern.

Fourth, the mould for casting rollers is made of earthenware in two parts and firmly joined.

Fifth, the elastic designs or patterns are dabbed with the gold or color intended to be used by means of a roller, "and pressed " against the articles to be ornamented."

These designs may be made in sections, "whereby any number " of colors may be worked at one and the same time."

[Printed, 8d.]

A.D. 1860, August 30.—N° 2094.

LOCKETT, ENOCH, and GOODWIN, HERBERT.—(*Provisional protection only.*)—"An improvement in stacking earthenware " during the process of firing, and in apparatus used for that " purpose." This consists "in the employment of a saddle." "The 'saddle' is formed rather longer than the diameter of the " articles to be stacked, and is provided at each end with a foot, " the upper part of each 'saddle' being furnished with recesses " or holes, in which the feet of the one above it rest, so as to " give greater solidity and security to the 'stack.' The 'saddles'

" are depressed in the centre to suit the form of the ware,  
 " and are here provided with two ridges (one at each side),  
 " on which the articles of earthenware to be fired rest. The  
 " 'saddles' are made of fire-clay, earthenware, or other suitable  
 " material, and may be either moulded, pressed, or otherwise  
 " formed, as may be preferred."

[Printed, *sd.*]

A.D. 1860, September 15.—N° 2249.

**BARNWELL, STEPHEN, and ROLLASON, ALEXANDER.**—  
 " Improvements in combining and mixing certain solutions of  
 " pyroxylene with animal, mineral, and vegetable substances, by  
 " which its quality is altered in such manner as to produce hard,  
 " resistant, adhesive, plastic, or resilient compounds and articles  
 " unalterable in their nature and varied in colour, which said  
 " compounds in a state of solution may also be advantageously  
 " employed as paints or varnish." The pyroxylene is made in  
 preference by steeping common rags in nitro-sulphuric acid. The  
 acid used on a former occasion made up to its original strength by a  
 little stronger acid is employed. The compound solutions or  
 pastes of pyroxylene with other ingredients are formed according  
 to their special requirements. The following are a list of in-  
 gredients. "Oils:—essential, animal, vegetable, or mineral.  
 "Gums:—resins, balsams, tar, pitch, bitumen, cements, wax,  
 "tallow, and grease, india-rubber, and gutta-percha, ivory  
 "and bone dust; powdered bark, farinaceous and amylaceous  
 "substances, starch and dextrins. Vegetable or mineral pig-  
 "ments and bronzes may be introduced as colouring agents, care  
 "being taken that everything employed in the compound be free  
 "from water; the solution of pyroxylene will, from its adhesive  
 "nature, combine freely with almost any foreign matter, and the  
 "compounds thus formed may be rendered available for a great  
 "variety of purposes," among which are enumerated some  
 articles which have "hitherto been made of glass or china."

[Printed, *sd.*]

A.D. 1860, September 20.—N° 2296.

**RICHARDSON, THOMAS, and PRENTICE, MANNING.**—  
 " Improvements in treating phosphoric matters and in obtaining  
 " products therefrom." Bones, &c. are treated with an excess of  
 hydrochloric acid, and heat is applied with agitation; the solution

is run into a reverberatory furnace called a "dandy" furnace, the whole is boiled down, any chloride of calcium in the dry mass is removed with water; the dry mass, among other uses, it is said, may be employed "in the production of glazes in the manufacture of earthenware."

[Printed, 3d.]

A.D. 1860, September 20.—N° 2297.

MORLEY, JOSEPH ROBERTS.—"Improvements in the manufacture of baking dishes." These are making such dishes with the lower part of soft unglazed clay, or "any other description that will stand the heat without flying." The bottom edge has "any number of scollops which raises it slightly, and permits a current of air to circulate beneath and around it." Or, "these dishes may be made of one and the same clay leaving the lower part unglazed."

[Printed, 5d.]

A.D. 1860, September 25.—N° 2331.

GEOGHEGAN, ROBERT.—"Improvements in machinery or apparatus for expressing liquids from various substances." These improvements, it is stated, are applicable to machinery for expressing liquid from potters' clay and similar substances. They consist in a hydrostatic press, "in conjunction with a containing vat or vessel for the reception of a substance to be operated upon, the table of the press working downwards into the vessel, and expelling the liquid through suitable escape or drain pipes; the under surface of the table, and the bottom of the containing vessel, are ribbed or channeled, and the substance to be compressed when in a semi-fluid state is contained in canvass bags or between layers of cloth, and placed between wire gratings; but, when the substance is of a solid nature, the canvass bag may be dispensed with. The ram of the press may be made hollow, and provided with an annular packing so as to fit the cylinder; and the water intended to operate the press, the pressure of which may be obtained either from a natural head or from a force pump, or both combined, is admitted alternately on opposite sides of the piston or packing, so as to elevate the table or depress it, by an ordinary slide valve or other suitable valvular contrivance."

[Printed, 9d.]

A.D. 1860, September 26.—N° 2339.

**BOULTON, WILLIAM.**—(*Provisional protection only.*)—"An improvement in the construction of potters' drying stoves and workshops, and in apparatus for preparing the clay for the moulds used by the potter, so as to render the process of drying more effectual." This consists, first, "in constructing passages or chambers with shelving fixed therein on which to place the moulds when covered with clay," and introducing hot air by an apparatus which confines the heat to any desired locality.

Second, instead of balling out the clay, as it is at present done, "press the clay by suitable machinery into flat cakes."

[Printed, *3d.*]

A.D. 1860, November 19.—N° 2836.

**JOWETT, HENRY ALFRED.**—(*Provisional protection only.*)—"Improvements in the method of heating or firing ovens for the manufacture of pottery and porcelain by means of gas, and in apparatus connected therewith." These are in an arrangement in which gas, air, and steam are employed in combination. A hollow fire-clay brick, with separate compartments, for the introduction therein of the three agents to be combined for producing an intensity of heat." On one side of the hollow brick a fire-clay tube is formed, "two inches diameter and six inches in length, at an angle of forty-five degrees, the end which is moulded on the brick being in the upper compartment for gas, and the lower one being for the admission of air and steam by a transverse division in the lower compartment of the brick." Solid bricks and hollow brick burners are built in the oven in alternate rows as bricks are now built in a round oven; by a series of pipes all the hollow bricks are united "externally by short pieces of tube from the upright pipes, the lower ends of the latter are inserted into a circular hollow casting" bolted round the oven containing the inflammable gas. Other arrangements are made for increasing the heat "by a hollow column of fire-clay in the centre of the ovens with burners all round."

[Printed, *3d.*]

A.D. 1860, November 22.—N° 2862.

**JOBSON, ROBERT.**—"Improvements in moulding articles of earthenware or porcelain, and in apparatus used therein." These improvements, with the exception of the following, are

described in N° 1531, June 23, 1860. "In the manufacture of  
 " some classes of telegraphic insulators and other hollow articles,  
 " the plunger or inner die is made in parts, which are sometimes  
 " concentric with each other, and sometimes are not, and they are  
 " capable of sliding on or in each other, so that they may be  
 " driven or pressed into the mould in succession up to a certain  
 " extent, and then driven simultaneously so as to finish the inte-  
 " rior of the article; and in place of the plunger or inner die  
 " being fixed to and forming part of the instrument which con-  
 " nects it with the fly-press," such instruments are made sepa-  
 " rate "from the plunger or inner die, so that the plunger or inner  
 " die may receive a succession of blows without being raised out  
 " of the mould. The concentric parts of such inner die or  
 " plunger are, in some cases, each composed of two or more  
 " pieces."

[Printed, 10d.

A.D. 1860, November 23.—N° 2866.

VENABLES, JOHN.—"An improved mode or modes of orna-  
 " menting the surfaces of earthenware, also applicable to the  
 " ornamenting of other useful articles." These are as follows:—  
 In lieu of engraving on a plate, the pattern is cut through the  
 same. The material for forming the ornament may be colored or  
 otherwise. A portion of the material is introduced "into the cut-  
 " through pattern, or into each cut-through pattern (if more than  
 " one) in the plate, and rub or press the material down upon the  
 " clay which is to receive the ornament," so as to "form a com-  
 " plete pattern on the surface of the clay." Clay so ornamented  
 is placed in moulds with the patterns upon the exterior surface of  
 the articles and pressed into the desired shape, after which, the  
 exterior surfaces of the patterns or ornaments are "even with the  
 " surface of the clay, or nearly so." An ornament may be applied  
 "in this manner to any article of earthenware, whether previously  
 " burnt or not." The material to form the ornament is spread  
 upon the table in powder, the cut-through plate is placed upon  
 it, and a bat of clay is pressed over the plate, and afterwards  
 moulded, as before. Instead of the above modes, the patterns  
 may be first produced on the surface of paper or other thin mate-  
 rial, and afterwards pressed upon the article. The paper may be  
 removed before burning or otherwise. Patterns formed as above

may also be transferred into "the interior surface of a mould within which a piece of clay is to be moulded."

Patterns upon articles not afterwards moulded are in relief.

[Printed, 4d.]

A.D. 1860, November 26.—N° 2900.

**McKENZIE, GEORGE, and HAMILTON, JOHN.**—"Improve-ments in bobbins or holders for textile materials." These are "manufacturing bobbins either wholly or in part of earthenware," as follows:—The clay is pressed out from a mould in cylindrical lengths which have a passage through them, these are dried sufficiently to admit of the barrel part of the bobbin being turned to form the required diameter; this is done by a cutting tool on a lathe. They are afterwards burned, after which "the ends are glazed in the usual manner." In lieu of turning them, bobbins may be made in moulds. Bobbins are made with the ends of earthenware, and the barrels of wood, tin, paper, or papier maché, instead of having the barrels as above. The clay is forced through a moulding plate, and the ends are stuck on afterwards, and fired, &c.

[Printed, 4d.]

A.D. 1860, December 4.—N° 2970.

**LEPETIT, MAXIME.**—(*Provisional protection refused.*)—"Making of china and earthenware articles by machinery." "A machine to be worked either by hand or by steam, or other motive power." "The machine in the making of the said articles will dispense with the employment of a thrower to form the clay into shape, and of a turner to turn it, and also of a batten to batten and mould the clay; but the machine, by being fed with "balls of clay of the required size, will, upon being worked," make and complete the aforesaid china and earthenware articles, and at a saving over the present system of making similar articles."

[Printed, 8d.]

A.D. 1860, December 4.—N° 2973.

**WALTER, WILLIAM THOMAS, and HENRY, CHARLES.**—"Improvements in means or processes for obtaining ornamental and other devices or effects on metal, glass, stone, and earthen-



"ware." These are, "all the parts of the surface to be obtained in relief are first coated with some oleaginous" matter not readily acted on by acid, after which it is dried, and the surface exposed to acid till a thin layer has been decomposed, except where protected. The whole surface is cleaned, dried, and coated with a protecting varnish of the following ingredients:—printing ink, Burgundy pitch, pine tallow, bees' wax, mixed in certain proportions, and likewise combined in a certain manner. Other modifications of this process are described.

[Printed, 3*d*.]

A.D. 1860, December 27.—N<sup>o</sup> 3168.

PARRY, WILLIAM.—"Improvements in the manufacture of chimney pots, pedestals, and such like articles made from clay or plastic materials, and machinery for that purpose." These are "employing machinery of the following kind:—"A die or "mould," of the desired shape, is formed in two parts, and the longest part is hollow and entire, or in some cases divided lengthwise, and to one or both ends of this part is connected, "by a hinge or otherwise, a cap of the shape which it is intended to form the cap or top" of the article.

[Printed, 10*d*.]

A.D. 1860, December 29.—N<sup>o</sup> 3192.

CHAMBERLAIN, HUMPHREY.—(*Void by reason of not filing a complete specification.*)—"Improvements in the preparation of clay for pottery purposes, which improvements are also applicable to filtering or cleansing liquids." These are a tank, having a layer of plaster of Paris over its bottom, into which tank the clay in the liquid state, or 'slip,' is poured; this tank is in connexion with any convenient exhausting apparatus; the plaster of Paris readily absorbs the superfluous moisture from the clay, whilst the exhausting apparatus being put into operation will again exhaust or deprive the plaster of Paris of the water drawn from the clay." This invention may also be effected as follows:—"In place of exhausting the moisture, driving it off or expelling it by means of hot air driven into the mass, or it may be pumped into a close chamber, of which some surfaces are composed of plaster; after the chamber is full, and

“ when the pressure increases the water will be forced through the plaster, leaving the plastic clay or other material in the chamber; the pressure can be got by a head or other means than pumping.”

[Printed, 8d.]

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1861.

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A.D. 1861, January 22.—Nº 167.

SIEMENS, CHARLES WILLIAM, and SIEMENS, FREDERICK. —“Improvements in furnaces.” These relate “to that class of furnaces where regenerators are applied to receive the waste heat of the products of combustion, and to communicate the same subsequently to the air supporting combustion.” In relation to this subject, as in firing pottery ware, “it is required that the furnace charged with these materials, after having been heated to the desired degree, should cool gradually and completely before it is charged again;” in such cases it is proposed “to provide similar furnaces side by side, and only one set of four regenerators, which, by means of slides or valves of fire-clay or other refractory material, can be made to communicate at intervals with the one furnace or heated chamber or the other. During the time that one furnace is fired the other is allowed to cool, to be discharged and charged again with fresh material, and vice versa. The regenerators are thus always kept in working condition.” Or four or more chambers are arranged “in such a way that they themselves are made to contain the materials to be fired, serving alternately as regenerators and as kilns, to be fired or discharged. Gas generators are arranged so as to be very regular. This is done by allowing the hot gases to ascend from the generators and to descend again after they have been partially cooled by exposure of the pipes containing them to the atmosphere. The decomposition of carbon is, moreover, avoided by the introduction into the generators, or channels leading from the same, of streamlets of water or of steam, which, in combining with the heated portions of solid carbon, form permanent combustible gases with the same, namely, carbonic oxide and hydrogen.”

[Printed, 1s. 6d.]

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A.D. 1861, January 28.—N° 225.

NEWTON, WILLIAM EDWARD.—(*A communication from William Henry Towers and John Hazard Browning.*)—(*Provisional protection only.*)—"An improvement in dinner plates." This consists "in forming," in their "rims or ridges," "cavities or receptacles to receive salt and other seasoning."

[Printed, 3d.]

A.D. 1861, February 23.—N° 470.

SPENCER, THOMAS.—"Improvements in apparatus for the manufacture of articles of earthenware and of other plastic materials." This invention, it is stated, "refers to machinery or apparatus in which the direct action of steam, water, or air is used for forcing the plastic material into moulds," and reference is made to N° 12,115, 1848. The improvements here are said to be, first, "making pipes, with or without sockets, in one mould, by pressing the material into a confined space." The confined space is the mould, "which is constructed in halves, mounted so as to slide within guides;" there is a core, "which may be withdrawn either before or after removing the article." Second, "the use of moulds with roughened surfaces, and in connexion therewith the use of oil, talc, or other lubricating material."

Third, "the use of cloth or other such material for covering the moulds."

Fourth, "forcing off the moulded articles" from the core, by an arrangement of a box the top of which "is capable of being pressed downwards, but is forced upward by means of a spring."

Fifth, "forming holes in the moulds for the escape of air, moisture, or superfluous material."

Sixth, "forming several articles simultaneously," "by adapting any desired number of moulds to a cylindrical or other shaped vessel from which the material is forced."

Seventh, "the use of moulds with cores capable of expansion and contraction." The core consists of a central part and four separate parts, the whole fitting together by dovetail joints; "on removing the central part," the other portions "may be moved towards the centre and lifted out."

Eighth, "forming the moulds for plumbago crucibles of zinc, copper, brass, or wood, or of iron coated with one of those materials, or with enamel."

Ninth, "applying moulds without the usual dod." Thus "moulds are made in halves," and are mounted "so as to slide within guides."

[Printed, 10d.]

A.D. 1861, April 1.—N<sup>o</sup> 804.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Albert Constant Gallais.*)—(*Provisional protection only.*)—"An improved method of fixing lac and lac varnishes upon glass and ceramic ware." This consists in spreading on their surface "a coating or layer of paste, made by preference with rye flour, and before the paste is dry in applying the lac or lac varnish." The article is then dried "in a stove, in which the temperature is gradually raised to a high degree."

[Printed, 8d.]

A.D. 1861, April 3.—N<sup>o</sup> 820.

BLANCHARD, MARK HENRY.—"Improvements in the manufacture, construction, and ornamentation of articles made of terra cotta, stoneware, and plastic clays, adapted for the construction of fire-proof stairs, steps, landings, slabs, tiles for roofing and paving, chimney shafts, columns for buildings, posts or standards, pedestals and statues, and in the method of moulding the same." These are, first, "to prevent alteration or distortion of the forms of the articles during the operation of drying, burning, or baking in the kiln, especially columns and large slabs," moulding them with a series of metal rods in the moulds, "so that when the aforesaid rods are withdrawn, hollow chambers or channels are thus formed" through them.

Second, in landing slabs and tiles, "forming holes longitudinally and transversely of the material in the thickness thereof in moulds, as before stated, or otherwise."

Third, in ornamenting articles, impressing the plastic material with the ornament in moulds, and "removing some of the plastic material by hand, or indenting by the mould," burning them, and afterwards filling in such parts with coloured clays, &c.; or a

device or pattern may be printed "on the surface of the material, and then burn the same in and enamel the entire surface."

[Printed, 1s. 11d.]

A.D. 1861, April 20.—N° 982.

CLARK, WILLIAM.—(*A communication from Samuel Daniel.*)—"Improvements in ornamenting porcelain and other earthenwares and glass." These are as follows:—"Apply to the object the color which is to serve as a ground;" "in some cases two layers of different colors may be applied." The article is placed "in an engine-turning apparatus," and ornamented by removing parts of the colour or colours.

[Printed, 6d.]

A.D. 1861, May 15.—N° 1240.

DOULTON, HENRY.—"Improvements in the construction of vats and similar vessels for containing liquids." These are when vats, &c., are too large to be made in one piece, making them in parts to be put together "by expressing clay through dies, and having projections and grooves (or it may be other arrangement of locking parts) at their edges, so that they may lock the one into the other." The blocks or tiles are by preference hollow. "The joints are made sound by suitable cement."

[Printed, 4d.]

A.D. 1861, May 18.—N° 1269.

PONTON, ARCHIBALD CAMPBELL.—(*Provisional protection only.*)—"Combining together siliceous powder into solid masses of any form by means of sulphur, and which combination I call siliceous stoneware." "Ground flints, ground quartz, or Lynn sand, or Tripoli or siliceous powder from any source," are added gradually to the melted sulphur. Colours may be added.

[Printed, 3d.]

A.D. 1861, June 20.—N° 1590.

LESUEUR, ANTOINE NICOLAS.—"Improvements in the manufacture of pannels of ceramic or pottery ware." These are forming these articles "with two grooves or mortices cut in dove-

"tail in the back of the pannel," "transversely, vertically, or otherwise, according to requirement, instead of with projecting or raised surfaces." These pannels, when placed, are "pressed sufficiently to cause the plaster to enter the grooves."

[Printed, 10d.]

A.D. 1861, June 25.—N° 1619.

LAFON, JULIEN.—"Improvements in the production of chromo-lithographic impressions upon glass, porcelain, and other similar material." These are as follows:—The impression to be reproduced on the article is executed upon stone. A piece of "coarse paper, sized, glazed, and previously coated on the side to receive the impression with a solution of gum arabic or other very homogeneous gum or adhesive," has "all the black of the design" "first impressed" upon it. "This impression in black is then powdered either with carmine, bronze, crimson, or other colour. The impression of the other colours is obtained by reversing the process of chromo-lithography upon paper," consequently the last colour but one must be printed after the black, and in all cases powdered with the desired colour, and so on to the end; but the third impression must, however, always be gold or silver in leaf or powder, and must entirely cover the preceding powdered colour," and "the fourth impression is taken in the same way." "A new impression or ground must be made completely covering the design," "composed of extra strong copal and white resin varnish." "After the impression of the ground the back of the paper is moistened with a sponge," and afterwards placed and pressed upon the article, and the paper finally removed by further moistening. After drying, the impression is coated with "a drying varnish composed of sugar or caramel and alcohol well mixed."

[Printed, 4d.]

A.D. 1861, July 8.—N° 1732.

COBLEY, THOMAS.—"An improved process for the manufacture of fluosilicates and silicates of lead and baryta, and for the application of the same to various purposes in the arts and manufactures." These substances are to be applied "to the manufacture of glass or porcelain, either as a glaze or as a

"pigment." "Sand, glass, flint, infusorial earth, slag, or any native silicated base" in fine powder is mixed, "in proper chemical proportions," with "finely ground fluor spar or any other compound containing fluorine." "To this mixture sulphuric or any other available acid is added, liquid or gaseous," and "heat may be applied." "The fluosilic acid thus obtained" may be conveyed into solutions of lead or baryta. Hydrofluosilic acid may be mixed "with the oxides of lead or caustic hydrate and carbonate of baryta to saturation," and boiled "where despatch is required." Producing "fluosilicate of lead by the action of fluoric acid or fluoric acid gas upon a silicate of lead; for instance, upon lead slag or silica in natural or artificial combination with a lead salt," dissolving up "silicates in the liquefied acid, or by passing the acid gas into finely powdered masses of the said materials." To "obtain fluorine as a waste or bye product in a gaseous or in a liquid form" is preferred, "to any other ordinary sources."

[Printed, 3d.]

A.D. 1861, July 15.—N<sup>o</sup> 1776.

COBLEY, THOMAS.—"An improved process for the production of or manufacture of fluosilicates of tin, zinc, and baryta, and their application as pigments for glazing, enamelling, and in the manufacture of glass." The oxide of tin is dissolved in fluosilicic acid. Solutions of salts of tin are decomposed by fluosilicic acid. Silicates of tin are decomposed by fluoric acid. The fluosilicate thus formed is treated with sulphide of ammonium or sulphuretted hydrogen, and the sulphide is applied "as a pigment or glaze or enamel in the manufacture of porcelain," combined with lead or otherwise.

Fluosilicate of baryta, besides being formed as described in N<sup>o</sup> 1732, 1861, is formed "by acting upon silicate of baryta either native or artificial with fluoric acid."

Fluosilicate of zinc is prepared by treating the oxide of zinc or its salts with fluosilicic acid, or silicate of zinc either natural or artificial free from iron is treated with fluoric acid.

[Printed, 3d.]

A.D. 1861, August 1.—N<sup>o</sup> 1916.

PRATT, MATHEW.—"An improved mode of manufacturing candle moulds." This consists in manufacturing these articles

from pulverized clay by pressure "in the manner now commonly practised in the manufacture of encaustic tiles, &c."

[Printed, 1861.]

A.D. 1861, August 3.—N° 1936.

LEWIS, JOSEPH.—"Improvements in producing and treating printing surfaces, in producing and preparing transferring surfaces, in transferring, in producing impressions on an altered scale, in preparing or treating surfaces of lithographic stones, and in obtaining devices or designs, also in agents and apparatus used in some of such improvements, parts of the invention being also applicable to photography, and to ornamenting pottery, porcelain, and glass." These are, first, producing printing surfaces in which the work or subject is produced on a larger scale than required, and is then reduced to the smaller.

Second. "Elastic transfer surfaces or media of india-rubber," extended mechanically to a stiff backing, and capable of being released from such backing.

Third. "The use of gutta-percha as a transferring medium, and for obtaining impressions on an altered scale."

Fourth. Parchment, dust, or pulp made into sheets for effecting reductions.

Fifth. Treating the surfaces of lithographic stones with liquid siliceous under vacuum or liquid siliceous with borax or potter's clay.

Sixth. "Reversing lights and shadows of works."

Seventh. Applying "printed negative transfers for etching purposes."

Eighth. "The automaton registers." These are several, and are for securing the accuracy of the working of the press frames.

Ninth. "India-rubber and gutta-percha for chromographic transferring purposes."

Tenth. Printer's roller composition for preparing transfers.

Eleventh. The production and application of the "photogenic agent, consisting of oil of lavender combined with asphaltum."

Twelfth. "Bisulphuret of carbon as a solvent."

Thirteenth. "Fugitive coatings and successive impressions or exposures."

Fourteenth. Repeated photographic or other impressions on extended india-rubber or gutta-percha, and collapsed or not.

Fifteenth. "The temporary attaching of a sheet of stout unsized paper behind india-rubber to prevent blurring."



Sixteenth. "Obtaining from raised surfaces, matrices, copies, or reproductions of increased elevation or depth of relief."

Seventeenth. Producing and applying "as a sensitive coating and as a photo-actenic medium" "bichromate of potash, combined with a substance (preferably gum) that will retard its crystallization."

Eighteenth. Preparing and applying surfaces "coated with transfer ink" for "the purposes of photo-printing."

Nineteenth. Preparing "transparent and translucent and semi-transparent surfaces or media of india-rubber and of gutta-percha."

Twentieth. Obtaining "devices or designs by metamorphosing, distorting, contorting, or altering autographs, figures, &c."

Twenty-first. "The production of an agent for reductions and enlargements by combining india-rubber with gutta-percha."

Twenty-second. "The employment of clean india-rubber, that is, india-rubber without surface preparation or coating."

Twenty-third. Applying impressions reduced from "a large scale to the ornamenting of pottery, porcelain, and glass."

Twenty-fourth. "The stretching or extending machines."

Twenty-fifth. "Elastic washers and fastening washers" applied to a clip; also "a spring metallic clip," also a self-acting spiral spring clamp.

Twenty-sixth. Applying the automaton register "to etching" "photoglyphic, photo-lithographic, and photographic processes" and transferring purposes," and to "printing surfaces."

Twenty-seventh. "The protecting of sufficiently developed portions of work from further action," by coating that portion with opaque powder, &c.

Twenty-eighth. "The application of transparent, translucent, or semi-transparent india-rubber and of gutta-percha as a substitute for chroma-transfer paper."

Twenty-ninth. "The production of durable transfer impressions by using surfaces of gutta-percha or india-rubber."

Thirtieth. "The method of transferring and retransferring, and the preparation of transfer and retransfer paper for the purpose."

Thirty-first. "The application of the automaton register to the treatment of printing surfaces for the restoration and reproduction of worn work."

[Printed, 4s. 2d.]

A.D. 1861, August 13.—N° 2009.

**JACOB, JOSEPH.**—(*A communication from Franz Kesch.*)—"Improvements in producing on porcelain and other ceramic products, on glass, Venetian enamels, and on metallic surfaces, designs in colors, and in gold, silver, and other metals." The metals, colours, enamels, and oxides to be used in the process are all in the finest state of powder. Either of these substances may be "ground into a paste with varnish, spread upon the roller, and transferred upon its stone, and from these several the complete design is in succession printed upon the paper in the lithographic press." The various impressions so produced may be further "coated or covered with the corresponding colour, metals," &c., in the shape of powder. The designs so printed are transferred to the articles in the ordinary manner, after which the articles are baked or burned.

[Printed, 4d.]

A.D. 1861, August 15.—N° 2034.

**KAIN, FRANCIS ALLEN.**—(*Provisional protection only.*)—"An improved manufacture of artificial stone or earthenware, applicable for bricks, tiles, retorts, railway sleepers, and other articles." Fine ground slate, carbonate of magnesia, fine sand powdered, and fine ground silica are mixed together, and "wet clay of any description" is added, as also water, to form the "plastic mass of a consistence suitable for moulding the articles required." The proportions in which it is preferred to mix the materials are given. The articles may be glazed as follows:—"During the filling of the kiln with the articles to be vitrified," "a small round heap or mound of common ordinary grey or white chalk or limestone" evolves gas, which glazes the articles. "Sugar of lead, or any other body that will melt at the before-mentioned high vitrifying heat" may also be used for glazing.

[Printed, 8d.]

A.D. 1861, November 12.—N° 2839.

**NEWTON, ALFRED VINCENT.**—(*A communication from Daniel Hartwell Shirley.*)—(*Provisional protection only.*)—"Improvements in the construction of dinner plates." These are "forming

“ around the main body of plates ” depressions or receptacles for articles of food, such as “ sauces, vegetables, & condiments.”

[Printed, 8d.]

A.D. 1861, December 11.—N° 3107.

**BROOMAN, RICHARD ARCHIBALD.**—(*A communication from Joseph Robert Prevost.*)—(*Provisional protection only.*)—“ Improvements in decorating or printing upon china, porcelain, earthen, and other like wares.” These are applying “ litho-cromy or the transfer in many colours to china and similar wares,” in doing which the modes of preparing the paper, colours, and matter for printing are described, as also the “ order of superposition of the colours,” the “ powdering or application of the colour,” and the transferring and “ firing or stoving.”

[Printed, 8d.]

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